NETWORK WORLD

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▶BULK-CALLING BONANZA

Unisys calls up US Sprint

Carrier also joins BOC in high-speed data pact.

BY BOB WALLACE
Senior Editor

DETROIT — Unisys, the newly named combination of Sperry Corp. and Burroughs Corp., last week signed on US Sprint Communications Co. to provide bulk long-distance calling services for its 950 U.S. sites, an arrangement that is expected to save Unisys $1 million a year.

The value of the multiyear Unisys agreement, under which US Sprint will handle voice communications between existing Sperry and Burroughs facilities, was not divulged. A Unisys source claimed US Sprint's services will replace those of several of US Sprint's competitors, but he declined to identify the other providers.

All network management and control tasks and service implementation will be handled by US Sprint. The bulk calling services provided to Unisys by the carrier are due to be operational by the end of the second quarter of 1987.

See **Unisys** page 35

▶TUMBLING TARIFFS

AT&T chops long-haul fees, ups leased lines

MCI, US Sprint vow matching rate cuts.

BY BOB WALLACE
Senior Editor

WASHINGTON, D.C. — AT&T proposed sweeping rate reductions last week amounting to $1.2 billion for most of its long-distance services, but tempered the good news by hiking the cost of its private-line services.

The cuts represent an average, across-the-board reduction of 8.1%. Special services and the intercity portion of private lines are expected to increase by an average of 3.3%.

Although users hailed the massive rate reductions, many said they would wait to see if MCI Communications Corp. and US Sprint Communications Co. match the cuts before subscribing to additional long-distance services from AT&T. Both MCI and

See **Cuts** page 34

AT&T proposed service rate changes

AT&T Service	Average change (%)	Monthly charge (%)	Usage fee (%)
Long-Distance Service[1]	8.1 ↓		
WATS	2.3 ↓		
800	2.3 ↓		
Megacom		16.7 ↓	4.0 ↓
Megacom 800		16.7 ↓	1.4 ↓
Software-Defined Network	4.2 ↓		
Special Services[2]	3.3 ↑		

[1] Represents state-to-state calls.

[2] Includes analog private-line services, Accunet digital services, Alliance dedicated service and some Skynet satellite services. See text for additional data on International calling service, Pro America and Reach Out America services.

SOURCE: AT&T

▶ INVESTIGATIVE REPORT

Consultants and vendors: Are they too close for comfort?

BY BYRON BELITSOS
Special to Network World

Eve, the world's first consultant, advised Adam to join her in eating from the tree of the knowledge of good and evil, thus violating God's clearly stated ethical code. Ever since those distant days, the myth goes, humankind has been prone to making moral and ethical compromises.

Take the case of communications consultants. For the last 10 years, the Society of Telecommunications Consultants (STC) has promulgated a code of ethics that clearly defines standards for honesty and integrity in the profession. The

☞ See **Consultants** page 28

▶ RATE REVAMP

FCC set to rule on Nynex access plan

User, carrier coalition mobilizes to block bold new tariff proposal.

BY MICHAEL FAHEY
Staff Writer

WASHINGTON, D.C. — A coalition of users groups, interexchange carriers and consumer organizations has arisen to oppose Nynex Corp.'s proposed access restructure tariff, a potentially precedent-setting plan that would hike private-line rates and force users to pay separately for the local portion of long-haul circuits.

The Federal Communications Commission could decide as early as Tuesday whether to approve the plan, which could significantly alter current long-distance access tariffs. Critics warned that FCC approval of the proposal could spur other local exchange carriers to file similar restructure plans.

The plan is opposed by the International Communications Association (ICA), the Ad Hoc Telecommunications Users Committee, the Consumer Federation of America (CFA), AT&T, MCI Communications Corp., US Sprint Communications Co. and other organizations.

Detractors claim the Nynex plan would unfairly lower the cost of long-distance service for Nynex's largest users at the expense of its other customers. In addition, they warn that the separate billing called for in the plan would be confusing.

See **Tariff** page 8

NETWORK LINE

News

Mountain Bell, with Northern Telecom and NCR, kicks off the nation's first ISDN trial. Page 2.

▼

Northern Telecom drops its direct sales in five West Coast states to streamline its distribution system. Page 2.

Software incompatibility is the No. 1 block in linking local nets and other computer resources. Page 2.

▼

Software Research Corp. cuts its work force to the bone and backs off from its flagship product, Strategic Network Environment. Page 33.

▼

Features

Alcoa Labs breaks ranks with other corporations by putting a marketing chief in charge of information networks. Page 31.

NEWSPAPER

▶ SERVICE TRIAL

Mountain Bell trio cuts over first ISDN user

BY JOHN DIX
Senior Editor

PHOENIX — Integrated Services Digital Network got its first real test last week when Mountain Bell, in conjunction with Northern Telecom, Inc. and NCR Corp., staged the nation's premier ISDN trial.

The trial was kicked off Nov. 18 with the cutover of ISDN voice/data lines for the Arizona Department of Transportation.

In January, the ISDN trial will be widened to support Honeywell Corp. and users within Mountain Bell.

While the Phoenix trial is a significant first step, the Consultative Committee on International Telephony and Telegraphy's ISDN standards are not complete.

Therefore, Northern Telecom had to make some assumptions in developing products for the trial, according to Mary Johnston, a senior consultant with the telecommunications group of BBN Communications Corp., a diversified communications company in Cambridge, Mass.

"The assumptions that Northern Telecom and AT&T have made aren't necessarily going to be the same," Johnston said. "We're going to have various flavors of ISDN kicking around until the standards are complete in 1987 or 1988."

200 ISDN lines

When Honeywell and Mountain Bell are cut over, the Phoenix trial will include roughly 200 ISDN lines, each supporting the CCITT 2B+D Basic Rate Interface.

This interface specifies the manner in which a single twisted-pair telephone wire can support two 64K bit/sec digital B channels for transmission of voice and data, and one 16K bit/sec D channel for signaling or low-speed data support.

Bob Meldrum, manager of ISDN information for Mountain Bell, said the company hopes to learn from the trial about customer control features and ISDN cost considerations.

"We want to see if it lowers overall costs," he said. "If it's not priced right, customers won't buy it."

Cost is, in fact, one of the primary concerns for the Arizona Department of Transportation, according to John Amidon, deputy manager of information systems/operations.

"We're looking at the feasibility of the technology and examining whether it will increase productivity and save money," Amidon said.

The department has 12 NCR Corp. PC6 microcomputers, each

See **ISDN** page 35

▶ LOCALNET '86

LAN software snafus cited

Hardware, topologies get clean bill of health.

COMMUNICATIONS
SOFTWARE

BY PAUL KORZENIOWSKI
Senior Editor

SAN FRANCISCO — Attendees at the Localnet '86 show here last week agreed that software incompatibility is the biggest impediment to integrating local networks with other computing resources.

In conjunction with Localnet '86, show sponsor Online International, Inc. held two other conferences — Open Systems and ISDN. The shows drew 500 attendees and 80 exhibitors. Conference speakers and attendees contended that local net hardware has become reliable and local net topology is no longer a burning issue. But they said current techniques used to massage data so it can be passed from system to system are riddled with flaws.

"No one talks anymore about whether local-area networks will work or if Ethernet, token bus or token ring will be the only topology to gain significant market share," noted Stephen Wendler, OSI marketing manager at Digital Equipment Corp.

"Everyone agrees that the equipment is reliable, and all the topologies will continue to flourish." The result, Wendler said, has been a proliferation of local nets. He said DEC alone has sold some 95,000 Ethernet connections.

Users at the show said the majority of currently installed local networks are used primarily within a work group. Only occasionally will local net users exchange data with users on other types of systems.

But the longer users work with their local nets, the more they want to link them to other systems. And as users try to link applications on different systems, problems crop up no matter what precautions a manager may take.

One government agency recently tried to link two types of minicomputers with a local-area network, said conference-goer Wayne Rus-

See **Localnet** page 8

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Table of contents

TOP NEWS

Starlan moves closer to final approval by the IEEE. **Page 33.**

Vendors agree that products based on OSI protocol standards may be farther away than users think. **Page 34.**

Terrorist bombers strike IBM's networking center in Heidelberg, West Germany. **Page 35.**

INDUSTRY UPDATE

Vitalink aims to position itself as a provider of wide-area networks. **Page 9.**

TELECOM TRENDS

Users and equipment vendors fear the consequences of the FCC's proposed full BOC deregulation. **Page 11.**

DATA DELIVERY

Avanti's president discusses his company's tactics in the T-1 market. **Page 17.**

COMMUNICATIONS MANAGER

A new association brings together all facets of the communications community. **Page 19.**

LOCAL NETWORKING

The booming local network industry may be heading for a shakeout. **Page 13.**

NEW PRODUCTS AND SERVICES

Infotron introduces hardware and software to meet the growing demand for fiber optic support. **Page 23.**

FEATURES **Page 28**

CALENDAR **Page 38**

▶ DISTRIBUTION

Northern sells off sales group

PacTel gains 700 new customers.

BY JOHN DIX
Senior Editor

SAN FRANCISCO — Northern Telecom, Inc. pulled out of the direct equipment sales business in five West Coast states last week when it agreed to sell the Western region sales and service arm of its Integrated Office Systems division to Pacific Telesis Group.

Under terms of the agreement, roughly 650 Northern Telecom employees — including salesmen, managers, technicians and administrative personnel — and associated assets will be transferred to PacTel InfoSystems, the equipment marketing subsidiary of Pacific Telesis.

The deal will affect roughly 700 Northern Telecom customers currently served by six western Northern Telecom offices in five states. Through the acquisition, PacTel will add Colorado and Arizona to a marketing territory that already includes California, Oregon and Washington.

Besides putting up an undisclosed sum for the Northern Telecom region, PacTel InfoSystems also agreed to carry Northern Telecom products as its flagship offerings for large system requirements.

The transaction will "strengthen the selling, marketing and service capability of Northern Telecom products in the western U.S.," according to Robert Potter, group vice-president of the company's Integrated Office Systems division in Richardson, Texas.

Part of that strength will result from a streamlined distribution system. Northern Telecom has traditionally sold products in this region through its own direct sales force, Bell operating companies and a mix of distributors. Maintaining multiple channels of distribution has often confused users and occasionally angered some of the organizations carrying the product line.

"We've released requests for proposal for 1,500 line switches and received six Northern Telecom quotes, and one quote each from AT&T, Rolm Corp., Intecom, Inc. and NEC America, Inc.," said Ed Horrell, president of Mitchell & Horrell, Inc., a Memphis-based telecommunications consulting firm. "The first decision you have to make is which Northern Telecom quotes you're going to throw out."

Potter admits redundancy was a problem. "This deal is meant to lessen channel conflict," he said, pointing out, however, that users could still be approached with multiple proposals for Northern Tele-

See **Northern** page 33

▶ REGULATORY ROUGHHOUSING

FCC plan threatens value-added nets

Scheme to regulate enhanced services has vendors, users upset.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — A proposal to regulate packet-switching and protocol conversion services now being studied by the Federal Communications Commission could sound a death knell for enhanced service providers and strip users of service options, Telenet Communications Corp., President Paolo Guidi said here last week.

The so-called Alternative A of the FCC's Third Computer Inquiry Supplemental Notice would subject value-added network providers to regulation for the first time since 1980, the year the agency deregulated enhanced services.

It would also allow AT&T and the Bell operating companies to offer value-added services as part of their basic services, thus creating an opportunity for them to cross-subsidize enhanced services with profits from the rate base.

Joining Guidi at a press conference exploring the impact the proposal could have on both vendors and users were representatives of the International Communications Association (ICA), the Ad Hoc Telecommunications Users Committee, CompuServe, Inc., Tymnet, Inc., and General Electric Information Services Co. (GEISCO). Each recommended that value-added services remain unregulated. The BOCs and AT&T favor regulating enhanced services.

> *"Alternative A would redefine packet network services with protocol conversion as basic services."*

The FCC proposed two other alternatives in the Supplemental Notice issued last May. Alternative B would allow the FCC to decide on a case-by-case basis whether value-added services should be regulated. This has been overwhelmingly rejected by those filing public comment with the FCC.

Alternative C would maintain the current unregulated status of value-added networks established under the Second Computer Inquiry and continue to allow the BOCs to offer enhanced services if they file a waiver application.

Under Computer II, the BOCs and AT&T were allowed to offer enhanced services through separate subsidiaries. That safeguard was designed to prevent the BOCs and AT&T from using the profits of their basic services to subsidize new enhanced-service ventures. In Computer III, the FCC lifted the separate subsidiary requirement, replacing it with accounting safeguards.

Alternative A would redefine packet network services with protocol conversion as basic services, thereby subjecting them to common carrier regulation. Under this plan, AT&T and BOC enhanced services would not be subject to the new accounting safeguards in Computer III, said ICA Attorney Brian Moir. AT&T and BOC enhanced services would be exempt from Comparatively Efficient Interconnection (CEI) and Open Network Architecture (ONA) requirements currently proposed under Computer III.

Alternative A could eliminate competition in this developing market by driving entrepreneurs away, said Warner Sinback, manager of telecommunications affairs at GEISCO. That, he said, would stifle innovation and leave users dependent on a few dominant providers.

Alternative A would also subject the value-added nets to state regulation as well as federal. "The threat of being subject to differing regulation in 50 states, and the administrative and cost burdens such regulation would entail, would have a particularly chilling effect on VAN service providers," said Clark Woodford, vice-president of telecommunications services at CompuServe.

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▶ VOICE MESSAGING

Octel rescues Rolm-Aspen orphans

BY BOB WALLACE
Senior Writer

MILPITAS, Calif. — Octel Corp. has tossed a life preserver to users who were cast overboard when Rolm Corp. stopped making interface products and telephone handsets that enabled users to operate Octel's Aspen voice-messaging system with their Rolm CBX private branch exchanges.

Octel is now offering the PBX Integration Device, which enables CBX users to operate Aspen without Rolm's ETS telephone handsets and interface cards, according to David Torrey, Octel's marketing manager. Rolm said in April it would stop manufacturing the ETS sets and the cards Octel used to establish a connection between Aspen and the CBX. Some Aspen users have suggested that Rolm decided to discontinue production of the critical gear because Octel's voice-messaging system competes directly with Rolm's Phonemail offering ("ETS demise hits Rolm, Octel users," *NW*, Aug. 4).

The PBX Integration Device enables callers to leave messages for Aspen subscribers without using push-button telephones and without knowing subscribers' mailbox numbers. The product features a special data link to the Aspen system that provides it such data as status information on each call. Through the integration device, Aspen instructs the PBX to set or cancel message-waiting indicators on subscriber telephones.

One user, whose company uses both Aspen and Phonemail on separate Rolm PBXs, lauded news of the availability of the PBX Integration Device. "We are very glad to see Octel back in the ball game," the user said. "We want the voice-messaging system for Rolm PBXs to stay competitive. We didn't like the idea of being locked into using Phonemail because it was the only offering," the user added.

Don Van Doren, president of Vanguard Telecommunications, Inc., a voice mail market research company in Morristown, N.J., said Aspen offers a number of advantages over Rolm's Phonemail offering. "Aspen systems are less expensive than Phonemail," he maintained. "Also, Rolm's Phonemail can only handle up to 16 ports in a single unit. To create a system that handles more ports, the user has to cluster multiple Phonemail nodes together." He noted Aspen also features a wide-area networking capability that Phonemail does not offer. The largest model of the Aspen system can handle up to 72 ports.

Octel claims the Aspen also works on Northern Telecom, Inc.'s SL-1 and SL-100 PBXs and its DMS-100 central office switch. Other PBXs it works with include Mitel Corp.'s SX-100, SX-200 and SX-2000; TIE/communications, Inc.'s Mercury; NEC America, Inc.'s NEC 2400; Hitachi America Ltd.'s DX; Intecom, Inc.'s IBX; and Siemens Communications Systems, Inc.'s Saturn and STC Starswitch. Aspen also works with AT&T's 1AESS Centrex switch.

Pricing for the 4- to 24-port, Aspen voice-messaging system equipped with the PBX Integration Device ranges from $55,000 to $200,000. The Aspen Maxum, which handles 16 to 72 ports, includes the new device and ranges in price from $155,000 to $600,000.

▶ R&D

Ameritech enlists David to strengthen Centrex

Data support, LAN functions on tap.

BY JOHN DIX
Senior Editor

CHICAGO — Ameritech Development Corp. last week announced it has entered into a research and development agreement with David Systems, Inc. to build a device that will enable telephone companies to add data support and local network functions to Centrex services.

Terms of the $3 million agreement call for Ameritech Development to pay David Systems roughly $1 million up front and the remainder in installments as milestones are reached, according to Tom Touton, a senior project director of Ameritech Development. Ameritech Development is a wholly owned subsidiary of Ameritech, the holding company that owns Bell operating companies serving Illinois, Indiana, Michigan, Ohio and Wisconsin.

The goal of the deal is to adapt the David Systems David Information Manager to be an adjunct processor for central office switches. Ameritech hopes to have the device in the hands of its operating companies to enable them to begin offering services in late 1987.

The David Information Manager is a customer premises device that works behind analog private branch exchanges or Centrex services to provide enhanced digital voice support, local network functions and data switching.

David Information Managers have three internal buses, a 64K bit/sec pulse code modulation voice bus, a 10M bit/sec Ethernet-compatible packet-switched bus and a signaling bus, according to Kevin Fong, director of central office marketing for David Systems.

The company's digital David Set telephones can be upgraded to support data devices by adding one of three types of David Adapters: asynchronous RS-232 adapters, Ethernet adapters and an integrated packet adapter for IBM Personal Computers and compatibles.

David Sets are connected to Information Managers with David Links that operate at 2.048M bit/sec over twisted-pair wire. Although much slower than the 10M bit/sec packet bus within the Information Manager, Fong said the access links do not degrade network throughput. The bottleneck with Ethernet networks is the shared bus users contend for, not the access link that connects users to that bus. David Links are dedicated to a single user. Once within the Information Manager, users contend for the 10M bit/sec bus as with any Ethernet.

One of the primary challenges facing David Systems is adapting the David Link so it can reach one to two miles from the Centrex serving office to the customer's presence. David Links are presently limited to 2,000 feet, Fong said.

According to Touton, David Systems will sacrifice half the speed of the David Link to achieve the distances required. He said the goal is to drive a twisted-pair Centrex wire at 1M bit/sec up to 12,000 feet. It is not clear how this speed reduction would affect throughput when compared to Ethernet interfaces supported by customer premises Information Managers.

Touton said that only one of Ameritech's operating companies is presently offering central office-based data-switching services, and that services made possible with David Systems technology would complement that offering. He also said such services would be compatible with Integrated Services Digital Networks.

Ironically, while Ameritech was announcing deals to develop interim ISDN-like services, Mountain Bell was inaugurating its first ISDN field trial (see "Mountain Bell trio cuts over first ISDN user," Page 2). Ameritech's Illinois Bell had announced plans to test ISDN services with McDonald's Corp., making it the first to launch a field test, but had to postpone the trial due to delays in software development.

In a statement released by Ameritech Development, Vice-President John Wray said services based on David Systems technology would offer "higher bandwidths than now currently envisioned for ISDN," and that, because the services could be adapted to be ISDN-compatible, he "expects there will be a strong market for this new system well beyond the 1990s."

NETWORK WORLD

Box 9171, 375 Cochituate Road
Framingham, Mass. 01701-9171
617/879-0700

Editor
Bruce Hoard
Managing Editor
John Gallant
Features Editor
Steve Moore
Associate Editor
Lisa Guisbond
Senior Editors
John Dix
Paul Korzeniowski
Pamela T. Powers
Bob Wallace
Staff Writers
Michael Fahey
Nadine Wandzilak
New Products Editor
Jim Brown
Washington, D.C. Correspondent
Karyl Scott
1273 National Press Building
529 14th Street NW
Washington, D.C. 20045
West Coast Correspondent
Mary Petrosky
3350 West Bayshore Road
Suite 201
Palo Alto, CA 94303
Assistant Features Editors
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Robert Mitchell
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ABC

Share your opinions about networking with the rest of the network world.

***Network World* is developing a comprehensive report on networking — and we need your help!** This report will cover, in an interesting and informative way, the people, the goals, and the tremendous potential of networking to revolutionize the way the world conducts its business.

The report will, we hope, foster a greater understanding of this emerging technology among executives, politicians, and end users.

Since our goal is to develop a paper that accurately reflects the vitality of networking and the views of the people who are involved with it everyday, your input as a communications user is essential. Of course, if we quote you in our paper, we will credit both you and your company.

We would greatly appreciate any views or insights you might want to share with us. To participate simply answer any or all of the following questions; fill in your name, title, company, and address; and send to Bob Forest, our consultant for this project, at Information Age, Inc., 49 Richmondville Avenue, Westport, CT 06880.

MAIL TO: Bob Forest, Information Age, Inc., 49 Richmondville Avenue, Westport, CT 06880.

1. What is your definition of networking?

2. In your opinion, how will networking revolutionize the way we conduct our business?

3. What is the primary hurdle that networking must surmount in order to achieve its full potential?

4. What solutions do you see for the problem of standardization in networking?

5. What kinds of new applications must be developed to make networking more universal?

6. Should technology be sacrificed to keep networks user-friendly?

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NETWORK WORLD

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▶ NETWORK MANAGEMENT

Vendors look to future

BY JIM BROWN
New Products Editor

NEW YORK — Integrated network management tools, expert systems and offerings supporting IBM's NetView are among the net management products under development, according to vendors who spoke at the Eastern Management Group's Crisis '87 — Network Management conference here last week.

Many vendors outlined their plans to prepare integrated net management offerings. Tom Wyrick, director of network systems product planning for Telenet Communications Corp., said his firm is working to develop software supporting multiple windows depicting different net management components. That would provide users with a simultaneous look at alarm conditions, real-time performance data, line conditions and a geographic representation of the net.

Morgan LaMarche, vice-president and co-founder of Avant-Garde Computing, Inc., said that by failing to offer integrated systems, vendors only add incompatible pieces to the network management pie and contribute to the overload of unusable information.

LaMarche said his firm's Net/Command offering was designed to integrate network management components from other vendors into a single system.

Dennis McKenna, vice-president of product planning for Paradyne Corp., said, "I don't think we have a problem collecting network management information. The biggest problem users have is correlating that information."

Both Wyrick and LaMarche predicted that expert systems for network management are months, not years, from entering the market.

Earlier this year, Case Communications, Inc. released an expert system for configuring large data communications networks.

End-to-end net management has become a top item on users' wish lists. "Network management is a very strategic element in Metropolitan Life's future. If we don't manage our network, we'll lose business," said Darlene Hoffman, Metropolitan Life Insurance Co.'s technical manager for data communications and an attendee at the conference.

Metropolitan's network consists of four data centers across the country outfitted with a total of 12 IBM 3081 mainframes and four IBM 3090 mainframes that process an estimated 3.5 million CICS transactions a day.

Some 20,000 to 25,000 terminals and personal computers located in the firm's nationwide sales offices use between 3,800 and 5,300 modems operating at from 9.6K bit/sec to 14.4K bit/sec to communicate over 180 multipoint analog lines, 350 analog point-to-point lines, two 230K bit/sec analog lines and two 56K bit/sec digital lines from AT&T. The lines are fed into 30 IBM 3725 and 10 IBM 3705 front-end processors.

The firm will soon be adding T-1 digital lines to the network and begin working with IBM's NetView net management system, Hoffman said. "Metropolitan feels it has to install IBM's NetView, work with it and see what it can do for us."

Vendors said they believe NetView will become a de facto standard, which will require compatible products in the future. ◪

▶ CRISIS '87

IBM exec backs open net management tools

NEW YORK — A top IBM executive said last week that his company is committed to an open architecture for both its Systems Network Architecture and NetView net management tools.

William Warner, Jr., IBM's director of Business and Systems Management, spoke during the Eastern Management Group's Crisis '87 — Network Management conference here.

Warner was product manager for NetView from 1985 until he was appointed to his current position in which he oversees IBM's Communications Programming Laboratory.

"We have to provide an open system. There is no other way to provide a comprehensive network management system without allowing other vendors to participate in it," Warner said.

Warner said IBM has made initial overtures to some common carriers for the development of products that would bring telecommunications line condition monitoring under the purview of NetView. Other network management components used in SNA, such as the Distributed System Executive and Network Performance Monitor, are also slated for inclusion in NetView.

Warner also said development of nondisruptive switching is key to the future success of NetView. Nondisruptive switching would allow users to switch devices attached to faulty lines to acceptable lines without taking the devices off-line. "We have development people working on that right now," he said.

Warner said other devices will undoubtedly be tied into NetView and NetView PC, especially as IBM pushes its open architecture. "SNA has been open for a number of years. The problem is, IBM didn't tell anyone about it."

Big Blue will not give a repeat performance, Warner assured the audience of users and telepone company executives. NetView's architecture has been published, and the firm is offering seminars on how to use it.

However, IBM has yet to establish a procedure to test and certify that products developed by competing vendors will work with NetView.

— By Jim Brown

▶ AT&T NETWORK SYSTEMS

The selling of ISDN

Marketers develop promotion strategy.

BY MICHAEL FAHEY
Staff Writer

OKLAHOMA CITY — AT&T Network Systems Group believes it has seen the future of telecommunications, and its name is Integrated Services Digital Network. Now, its task is to sell that vision to users and local telephone companies.

During a recent press briefing here outlining the role of AT&T's 5ESS switch in delivering ISDN services, J.L. Johnson, AT&T Network Systems' digital equipment product manager, claimed user enthusiasm for ISDN is "not as good as it has to be. The customers are not convinced yet." The company is taking steps to ensure that lack of enthusiasm doesn't hinder Bell operating company and local telephone company implementations of its gear.

In order to boost user enthusiasm for ISDN, Network Systems has put together a special marketing group tentatively called Comquest. "The group has been formulated to work specifically in the area of honest-to-goodness ISDN development," explained David Bohn, AT&T Network Systems' national manager, business feature applications. "That is to say, the group will look at what customers' needs are and how ISDN can help them meet those needs."

Bohn said members of the Comquest team are located in regions essentially corresponding to the regional BOC territories.

During the press conference held at AT&T's sprawling Oklahoma City Works, where the 5ESS central office switch is assembled, Bohn said Network Systems is attempting to identify "communities of interest" for ISDN applications.

He said his organization is directly marketing ISDN to the BOCs and other local telephone companies, which buy equipment from AT&T Network Systems. But Network Systems is aiming its promotional activities at users as well as telephone companies.

Bohn said the Comquest group has begun to approach end users through focus groups in order to devise actual marketing and application strategies.

He added it will be important to promote the use of ISDN among a variety of users in order to effectively tariff the service. According to Bohn, state public utility commissions will be reluctant to allow local telephone companies to spread their ISDN costs among network users if the services are limited to large customers.

See **5ESS** page 35

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▶ LOCALNET '86

Product cavalcade ups local net connectivity

BY MARY PETROSKY
West Coast Correspondent

SAN FRANCISCO — A variety of vendors, including Proteon, Inc., Fibronics International, Inc. and Netronix, Inc., took advantage of the Localnet '86 show here last week to showcase new products ranging from T-1 connections for local nets to AT&T's Starlan-compatible adapters.

Westborough, Mass.-based Proteon made a number of announcements, including support for T-1 links through its multiprotocol gateway and a network interface system for its token-ring networks that replaces an IBM 3274 cluster controller. Fibronics of Hyannis, Mass., also announced support for T-1 with its K310 Communication System.

The K310 links IBM mainframes running the VM or MVS operating system to Ethernet networks via T-1 lines or other high-speed links. It consists of a host controller and an Ethernet controller, which combined are priced at $39,500. The K310 uses Fibronics' KNET networking software, which supports Transmission Control Protocol/Internet Protocol (TCP/IP) and provides remote logon, file transfer, electronic mail and other services. KNET is priced at $15,000 for MVS systems and $8,500 for VM systems.

Fibronics also introduced a personal computer version of KNET, dubbed KNET/PC, which allows an IBM Personal Computer to operate as a host on an Ethernet network through TCP/IP protocols. KNET/PC comes with a network interface card and is priced at $980.

Both Fibronics and FiberCom, Inc. of Roanoke, Va., introduced fiber-optic repeaters for connecting Ethernet local-area nets. Fibronics' FER 2010 can connect two Ethernet local nets up to 3,000 feet apart. The FER 2010 consists of two 802.3-compatible transceivers and a duplex fiber-optic cable and is priced at $5,000.

The FiberCom WhisperLAN/RPT can connect two Ethernet coaxial cable segments that are up to 2000 meters apart. Each WhisperLAN/RPT features a repeater and fiber-optic transceiver. Two local-area networks can be interconnected for $2,500, with connections for each additional segment priced at $1,250.

More news: page 33

Netronix of Petaluma, Calif., debuted two Starlan — a 1M bit/sec implementation of 802.3 standards over twisted-pair wiring — adapters for IBM Personal Computer ATs and compatibles. The PNA400-01, an intelligent adapter designed for use in server applications, features an Intel 80188 microprocessor that performs protocol processing and support for IBM's Network Basic I/O System (NETBIOS) in a programmable read-only memory chip. The PNA400-02 is designed for workstation applications, with protocol processing handled by the workstation. The PNA400-01 is available for $600. The PNA400-02 is priced at $350.

Netronix also introduced the RFM200 MAP Modem Board and two frequency-agile network adapters for the IBM PC Network. The RFM200 conforms to IEEE 802.4 specifications. The modem interfaces to a MAP controller board via the proposed 40-pin MAC/PHY interface and is available in Digital Equipment Corp. VME, Multibus, Q-bus and Unibus formats. It will be available in January for $1,095.

The company's dual-cable PNA101 and single-cable PNA102 PC Network adapters operate at 2M bit/sec on any 802.7 cable plant in frequencies not used by the IBM products. Both adapters, which will be available in the first quarter of 1987, come with a host resident NETBIOS emulator. The PNA101 is $690. The PNA102 is $20 more per board.

Zenith Electronics Corp. announced two new Network Communication Units (NCU), an 8-port and a 16-port model, for its Z-LAN 500 broadband network.

The NCUs feature ports that support asynchronous RS-232-C interfaces. Each port can establish a circuit with any other port on the network at data speeds from 110 bit/sec to 19.2K bit/sec. The 8-port NCU is priced at $2,400, and the 16-port NCU is $3,500.

Zenith's Network Manager consists of a dedicated Zenith Systems IBM Personal Computer XT-compatible computer with specialized software and hardware. The system can monitor the network, redistribute the data communications load, remotely configure NCUs on the network and adjust modem power levels and frequency, among other functions. It is priced under $12,000.

Localnet from **page 2**

sell, a principal with American Management Systems, the consulting firm that worked on the project. He said Ungermann-Bass, Inc. interface units were chosen to link the systems.

Russell said the physical connections between the systems were relatively simple to install and worked well. Messages could be sent from a minicomputer terminal to a personal computer on the local network.

The agency chose only application packages that adhered to such standards as the Data Interchange Format (DIF). That conformance was intended to ensure that data could be shipped in usable form from user to user.

Such was not the case. The agency quickly discovered that vendor implementations of the selected standards differed greatly and document translation problems arose. Unhappy users at the agency put so much pressure on the software that vendors provided conversion routines that allowed users to transfer data between the various packages.

Attendees agreed the problem of document translation won't soon disappear. Standards such as DIF will be replaced by the International Standards Organization's Open Systems Interconnect standards once they mature and are finalized.

Users at the conferences said they viewed the OSI as an important step toward alleviating the problems associated with integrating systems. But they realized OSI will not be a panacea.

"The intent of OSI is to have one set of standards that systems will conform to," said Charles Gardner, corporate coordinator of systems standards at Eastman Kodak Co. in Rochester, N.Y. "But as OSI evolves, there will be differences in those standards."

Tariff from **page 1**

The tariff change, dubbed the End-User Originating Access Service, was filed by Nynex on June 26 after the FCC rejected an earlier Nynex restructure plan. The proposal shifts the cost of the local portion of long-distance calls from the interexchange carriers to end users. Local exchange carriers now bill the interexchange carriers for the local portion of long-distance calls. Interexchange carriers pass the charges on to users. Under Nynex's plan, users would receive a separate bill for the local portion of long-distance calls.

Under the plan, charges for the local portion of long-distance service would be based on use. The New York Attorney General's office has estimated that residential and small business customers in New York state would pay 260% more than large users for switched access. The plan also calls for Nynex to add a surcharge of about $5 per termination per month for each voice-grade private line.

With the Nynex proposal, according to Nynex Division Manager George Leach, interstate direct distance dial calls originating in New York state during peak hours will cost 7.8 cents per minute for the first 60 minutes of calls per month. The cost of calls would decrease as the number of call minutes per month increases. New York customers with 20,000 calling minutes or more per month would pay 2.55 cents per minute. Interstate long-distance calls originating in New England would be billed according to the same tapered discount structure, but the per minute rate will be different.

In a letter to FCC Chairman Mark Fowler dated Nov. 12, officials from the CFA, ICA, the Ad Hoc Committee and AT&T as well as MCI and US Sprint asked the FCC to reject the Nynex plan.

"The Nynex proposal would raise the cost of services to most long-distance users, enormously complicate the way end users obtain service and introduce great confusion into the market," the letter states. The letter notes that the plan's opponents also include state public utility commissions and independent telephone companies.

The letter asserts that the discounts offered to large users of switched services would be borne by residential and small business customers and private-line users.

Gene Kimmelman, legislative director of the CFA, said that in addition to raising long-distance costs for residential and other small users, the plan would increase consumer confusion over phone bills by adding an additional bill for the local portion of long-distance calls.

Nynex defended the proposal as being necessary to keep large users from employing private-line service to bypass the public-switched network.

"The plan recognizes the economies of scale for serving large customers. The higher the usage, the less the incremental cost to the network," Nynex's Leach said. "It also provides incentive for large users to stay on the public network and to continue to support the low-volume users."

Leach also said that while private-line service is useful and necessary for some data applications, more than 90% of private-line service is for voice-grade private lines.

Brian Moir, a Washington, D.C.-based attorney who represents the ICA, denied Nynex's claim that the access tariff restructure was necessary to prevent bypass. "The issue of bypass is one of the most overdiscussed and underdocumented issues in the telecommunications business today," Moir said. "In the past, Nynex and the other operating companies used the term bypass to mean many users were building their own networks to bypass the local phone companies. When studies showed that this wasn't true, bypass suddenly came to mean companies who were using private lines."

Jim Blaszak, attorney for the Ad Hoc Committee, said Nynex did not adequately document the need for the tariff change. In addition, Blaszak warned that if the Nynex proposal is approved by the FCC, other local exchange carriers are almost certain to propose their own restructure tariffs, adding confusion to an already complicated tariff structure.

Blaszak said he believed the Nynex proposal is an attempt to influence the marketplace by making the public-switched network more attractive to users than private-line service.

"I think this is part of the operating companies' overall strategy," Blaszak said. "The changes won't necessarily make money for them in the short term, but it is a way of controlling the market."

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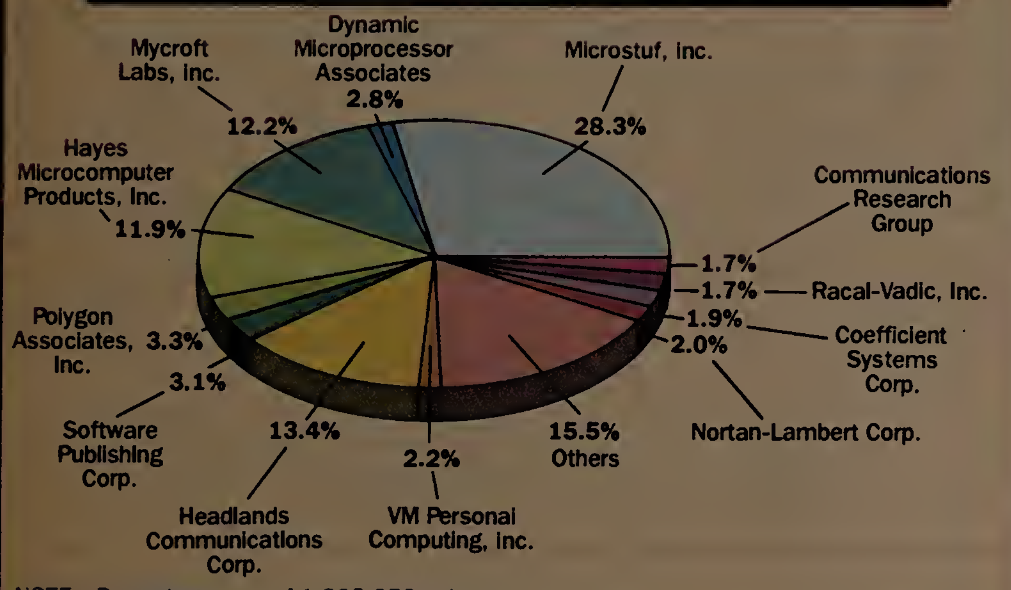
INDUSTRY UPDATE

> “Equal access has been a double-edged sword for the competitive, long-distance carriers. For every line converted, the access cost paid by the [other common carrier] doubles, driving up the cost of doing business dramatically. At year end 1985, AT&T paid approximately 57.9% of its long-distance billings to access charges, while MCI Communications Corp. paid 38%. The increased cost of doing business plus the heavy financial demands of equal access marketing have helped to erode the number of viable long-distance carriers.
>
> From “**Market Watch**”
> The Yankee Group
> Boston

Installed base of personal computer communications software



NOTE: Percentages are of 1,802,250 units (software licenses) installed worldwide in 1985.

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

▶ STRATEGIES

Vitalink targets wide net mart

Refocuses as satellite market softens.

BY MARY PETROSKY
West Coast Correspondent

MOUNTAIN VIEW, Calif. — In what many view as a soft market for satellite-based communications systems, Vitalink Communications Corp. is attempting to reposition itself as a provider of wide-area networks through its 802 WAN, an architecture and series of products that allow users to link local-area networks to wide-area networks.

To support its new thrust, Vitalink last week introduced two servers, TransSDLC and TransLink, which work in conjunction with the company's TransLAN bridge. TransLAN acts as a switching device to connect two or more Ethernet or 802.3 nets, and it is at the heart of the 802 WAN architecture.

Because TransLAN operates at

See **Vitalink** page 10

▶ MERGER

Comsat and Contel face fed scrutiny

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — Despite recent assurances from Communications Satellite Corp. (Comsat) and Contel Corp. to the Federal Communications Commission that the firms' proposed merger would serve the public interest while still satisfying Comsat's jurisdictional requirements, federal officials will scrutinize the deal.

The firms two weeks ago filed a joint merger application with the FCC, which is overseeing the merger on behalf of the executive branch. Executive agencies are expected to file comments on the merger with the FCC, though a deadline has yet to be set on those filings. Members of the FCC, U.S. Congress, Reagan administration and Department of Justice have already begun weighing the complex issues involved in the unique acquisition of a common carrier by a corporation created by Congress.

Comsat argues that its acquisition of Contel will allow the resulting corporation to fulfill all of Comsat's legal and regulatory requirements. Under its bylaws, Comsat cannot be acquired by another company.

The $2.5 billion merger will not adversely affect competition in any of the two companies' markets because the new company will only hold 66% of the overall telecommunications market, according to the merger application. Separate subsidiaries will be retained between regulated and nonregulated businesses.

But in a recent letter to FCC Chairman Mark Fowler, Rep. John Dingell (D-Mich.), chairman of the House Energy and Commerce Committee, questioned the transfer of stock from Comsat to Contel shareholders and the potential domination of Comsat by a common carrier.

The uppermost issue surrounding the merger is its effect on Comsat's role as U.S. signatory in the International Telecommunications Satellite Organization (Intelsat) and the International Maritime Satellite Organization. While there is little doubt Comsat's acquisition of the larger and wealthier Contel will benefit the satellite firm's financial health and competitive stance, there is doubt as to wheth-

See **Merger** page 10

VENDOR VIEW

JAMES C. HAHN

Bottom-line net management

The greatest advantage of a comprehensive network management system is gaining control of what was once uncontrollable.

The accelerated demand for standardized, high-speed transport solutions, combined with the increased availability of bandwidth, has presented new challenges and imposed new constraints on network operation.

In particular, as AT&T's Software Defined Network (SDN) and Integrated Services Digital Network services are developed, using T-1 primary rate access, multinode configurations will emerge. To take advantage of these expanded network configurations and to reap the benefits offered by new services based on SDN, ISDN and dedicated T-1 facilities, network management and control must evolve.

Extending well beyond the realm of diagnostic testing and troubleshooting, an optimal network management system must include fault detection, fault isolation, service restoration, capacity planning and configuration management functions. An improved human interface also represents another important part of this new net management definition.

To economically and efficiently support the changing scope and design of communications networks, these comprehensive functions must be built into each and every network component so that no single point of failure can disable the entire network.

In addition to the detection and isolation of potential and existing system faults, network management techniques must be distributed across the entire network, providing centralized control of both T-1 backbone and access links from a single point. By doing this, the manager not only protects the installed base of existing communications equipment but lays the groundwork for future growth.

In preparing for the implementation of both ISDN and dedicated T-1 facilities, users must be able to perform and distribute all management and control functions, throughout the network, from a central location.

Distributed control will become even more critical in multinode ISDN nets. All activities relating to a specific node that are handled locally or remotely must also be coordinated with the central network management functions.

Management of remote facilities goes beyond monitoring and alarm capabilities. It should provide total control, including monitoring of network port and link status; automatic or manual alteration of network configurations and parameters; the ability to diagnose and switch both analog and digital lines; the generation of traffic and event statistics as needed; and the ability to produce a variety of comprehensive management reports.

In addition, the ability to construct network models and perform cost analyses allows the network manager to

See **Management** page 10

Hahn is president and chief executive officer of Infotron Systems Corp., a vendor of data communications equipment based in Cherry Hill, N.J.

Vitalink from **page 9**

the data-link network layer, it can transport higher level 802.3-compatible protocols, such as DECnet, Xerox Network Services and Transmission Control Protocol/Internet Protocol, across the network without translating them. Similar devices — or those running the same higher level protocols — can talk to like devices over the 802 WAN. The TransLAN can work across a satellite link or a terrestrial line.

TransSDLC and TransLINK take data from IBM's 3270 environment and from systems using high-level data link control (HDLC) protocols, respectively and package it in a common format that can be transmitted over the 802 WAN.

TransLink supports ISO-3309 bit-synchronous protocols, which are used in the X.25 interface, HDLC protocols and IBM host-to-host communications. Both the TransSDLC and TransLINK consist of a combination of hardware and software and are available for $12,500 each.

By focusing on the interconnection of local nets, Vitalink hopes to pull itself squarely into profitability. Although Vitalink executives said the privately held, 150-employee company expects revenues of $22 million this year, up from $17.5 million last year, profit performance has been spotty.

The executives stress that Vitalink is addressing general data networking, and that its satellite technology plays a supporting role. "We're just as ready to help users install [a network] that uses terrestrial links. Literally, 80% to 90% of the TransLAN products sold are running over terrestrial lines today," said Paul Schaller, vice-president of marketing and sales.

Vitalink currently has about 125 TransLAN users with more than 530 TransLAN devices installed. By contrast, the 6-year-old company has sold approximately 75 satellite earth stations, both Ku-band and C-band, to some 25 users.

However, Schaller said he believes demand for satellite systems will pick up as users expand their wide-area nets. Both satellite and local network transmission share common characteristics, such as broadcast capabilities and low bit error rates, which Schaller believes will prove attractive to users.

Vitalink began to shift its focus three years ago when it made a major investment in the data communications side of its business, according to Patrick Nettles, vice-president of business development. "We've focused on data networking in a very general sense, as opposed to trying to solve vendor-specific or proprietary architecture kinds of networking problems, [such as] the Synchronous Data Link Control terminal-to-host networks that the VSAT people attack," he said.

Vitalink's strategy was also influenced by the fact that it was working closely with Digital Equipment Corp. on research and development, Nettles said. The joint work with DEC continues.

In addition, Vitalink last week announced it completed joint certification testing with Hewlett-Packard Co. The certification establishes that TransLAN II works with 802.3 local nets that contain HP 3000 minicomputers.

By taking the 802 WAN approach and allowing multiple protocols to use the same transmission media, Vitalink is letting users optimize the use of their lines, Nettles said. Users are increasingly demanding this capability, notes Philip Arst, president of Communication Strategies Associates, Inc., a Cupertino, Calif., consulting firm specializing in bypass networks.

While many satellite vendors were bogged down writing software to match specific protocols of their satellite links, Vitalink has opted to support 802.3, Arst said.

"The customer is protected because he has a worldwide standard on his network." If necessary, protocol conversion can be provided on the local-area network by third-party vendors, Arst said.

"I think all the VSAT vendors need to address niche markets; no one has the solution for all problems," he said. "Vitalink has repositioned itself — and I think correctly — as a data communications company that happens to offer satellite transmission."

Arst stressed, however, that Vitalink's approach is suited to customers who need to interconnect a large number of terminals at multiple sites.

Management from **page 9**

assess the impact of expansion and tariff changes.

Further cost savings and operational efficiencies are provided by the support of multiple network management stations at a single site and stations distributed at several sites. Supervisory control of both T-1 backbone and access networks will put the user completely in charge. This means that various system features or carrier services can be selected on an as-needed basis.

In particular, single-point control supports instant provisioning, which allows the user to instantly request specific services and dynamically allocate resources. Aside from providing greater levels of network management, single-point control also allows skilled operators to execute network control techniques from a central site, which reduces the need for personnel at remote sites.

Regardless of the diagnostic and troubleshooting techniques employed, the network manager must be able to control the network without an intimate understanding of the specific control requirements.

Today's sophisticated network management systems provide a variety of features that reduce the learning curve through enhanced human interfaces. These systems incorporate color graphics, a menu-driven interface, help screens and multiwindow displays to vastly reduce the user's learning curve and dramatically improve system response times.

The user learning curve is further reduced by using a mouse device, touch pad or touch screen in conjunction with graphic symbols or icons for quickly accessing menu options.

In addition, multitasking, multiwindow displays result in greater ease of use and increased functionality by allowing the network manager to execute diagnostics, alter net configurations and monitor performance simultaneously.

In the future, increased network functionality with decreased operator effort will ease the transition toward self-sufficient T-1 transport networks. To retain a competitive edge and guarantee efficient network operation and expansion, technical control, network control and performance monitoring must be extended from the most sophisticated piece of networking equipment down to the modem level.

While industry members are hedging their bets on emerging network services and the reality of ISDN networks, there is little dispute over the merits of network management and control and their impact on the productivity and profitability of corporate communications networks.

Merger from **page 9**

er the government-created Comsat should be allowed to acquire another company within the telecommunications industry.

In its defense, Comsat cited recent mergers and acquisitions within the telecommunications industry that the government has allowed, such as those of MCI Communications Corp., IBM and Satellite Business Systems; General Electric Co. and RCA Corp.; and GTE Sprint Communications Corp. and United Telecommunications, Inc.

Comsat notes that recent market forces and the current regulatory environment have encouraged such mergers and, in addition, the FCC has argued in favor of increasing competition in the international satellite arena.

"The Comsat/Contel merger is a special case, however," said FCC Common Carrier Bureau Chief Bert Halprin. "Comsat was created by an act of Congress [Communications Satellite Act of 1962] and has a unique role as the U.S. signatory in Intelsat," he said. "We will have to look at this merger on its own unique merits."

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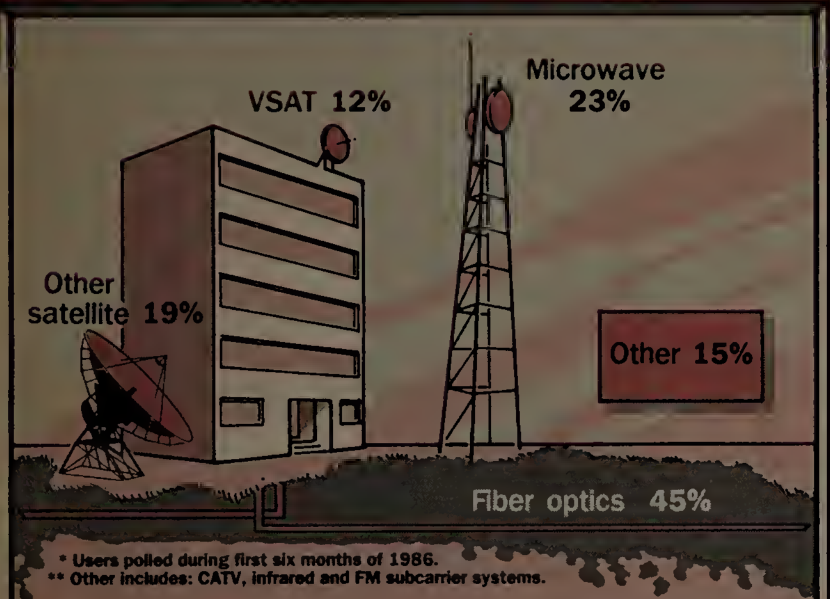
> **Howard K. Smith**
> Former television news broadcaster

Alternative transmission media role in user networks



* Users polled during first six months of 1986.
** Other includes: CATV, infrared and FM subcarrier systems.

A survey of 68 organizations using transmission media other than twisted-pair or coaxial cable revealed heavy user reliance on lightwave cable in their communications networks.

SOURCE: DATA PRO RESEARCH CORP., DELRAN, N.J.

Washington update

The Federal Communications Commission has approved AT&T’s request to offer Custom Switched Network Service (CSNS). The tariff became effective on Nov. 12. The FCC rejected the arguments of US Sprint Communications Co., Southwestern Bell Telephone Co. and ALC Communications Corp. to either reject or suspend and investigate AT&T’s tariff.

CSNS is a new WATS alternative service which was filed under AT&T’s Message Toll Service (MTS) tariff. Using switched, rather than dedicated, access, CSNS is designed for customers who have between 25 and 1,000 hours of usage each month. CSNS uses local exchange carrier switched access and includes recurring, nonrecurring and usage-based charge elements. The opponents to CSNS argued that AT&T’s cost support data lacked sufficient information to justify the offering.

After a series of delays, the U.S. General Services Administration has issued a second request-for-proposal draft for its $4.5 billion FTS 2000 contract. The latest specification for a new federal telephone system is scaled back somewhat from the first draft, which called for many expensive state-of-the-art capabilities. Gone from the latest RFP are service enhancements such as voice mail, a capability that would not have been widely used by federal government employees, according to the GSA.

The second draft calls for price adjustments every four years. The initial draft called for fixed rates for communications services for 10 years. The second draft calls for an all-digital network with switched voice and data, packet switching and video capabilities. The GSA is still hoping for an end-of-the-year release of the final RFP. The contract is scheduled to be awarded in the fall of 1987.

The Public Utility Commission of Texas is considering deregulating some of AT&T’s long-distance services in the coming year, provided there is evidence that AT&T will not regain a monopoly position in the market. Services which might be deregulated include basic toll service, WATS and private lines. AT&T 800 service would not be eligible for consideration in the deregulation process. ☑

▶ ANALYSIS

Vendors and users fear deregulation

BOCs could force interconnects from market.

BY BOB WALLACE
Senior Writer

Telecommunications equipment vendors and some communications industry analysts have joined users in decrying total deregulation of the Bell operating companies in the future. Interconnects fear such an action would put them out of business.

All parties fear further deregulation of the BOCs would enable these companies to quickly monopolize the sale of customer premises equipment. Interconnects, which sell such gear as private branch exchanges, key systems and call accounting software, would be forced out of the market.

Federal Communications Commission Chairman Mark Fowler discussed total telephone company deregulation in a *Federal Communications Law Journal* article coauthored with FCC Common Carrier Bureau Chief Albert Halprin and Common Carrier Special Counsel for Domestic Policy Member James Schlichting (“Fowler touts telco deregulation,” *NW*, Oct. 20).

At present, the FCC’s Second Computer Inquiry stipulates that the BOCs cannot market equipment and services through the same division. Computer II required the BOCs to establish separate subsidiaries to sell hardware and enhanced services. The Third Computer Inquiry called for the BOCs to set up a series of cost accounting

See **Deregulation** page 12

CROSS TALK

BOB WALLACE

Playing the delivery dating game with your vendor reps

Users wary of a vendor’s ability to deliver a product immediately should try the old purchase order test. It will likely eliminate user confusion about whether a promised product is commercially available.

When the user sits down with a vendor sales representative to discuss the vendor’s product line, if the vendor rep begins speaking of “a revolutionary product that will change the telecommunications industry,” the user should call what is often the vendor’s bluff.

The user should come to the meeting equipped with a purchase order number given him by his company. When the user is satisfied that he can use the product in his company’s telecommunications network, he should then play his trump card — the purchase order.

“The device sounds great, I need a pair of them,” the user would say, adding, “I have a purchase order right here in my pocket, how soon can you deliver the product?”

The user can determine just how far along the purported revolutionary product is in the development and marketing cycles by the look on the vendor rep’s face once the purchase order has been slapped down on the table in front of him.

If the vendor rep stammers that he can’t deliver the product until some vague point in time, the device probably has not yet been beta tested and might not reach that stage in product development for several months. It’s time to explore similar products touted by other vendors.

If the vendor rep claims the product is still in beta test at user sites that he won’t talk about, the product will likely not be commercially available for several months as beta tests generally run from three to six months. Oftentimes, the product will require last-minute improvements after the beta test but before it becomes generally available to users.

If the vendor rep’s first response is to issue an immediate disclaimer about the discussed product, the device probably won’t be commercially available for some time. The translation for: “The product isn’t ready for shipping yet; our R&D people are still working some of the bugs out of it,” is, “Don’t wait underwater for the product.” In this instance, the user should place the purchase order back in his pocket.

If the vendor rep smiles and takes the order, the product is at worst a few weeks away from general availability. One or two user-to-vendor phone calls should produce the product.

BOC BRIEFS

SAN FRANCISCO — The California Public Utilities Commission has approved a provisional tariff for Pacific Bell to provide basic packet-switching services within its local access and transport areas.

The offering will support communications from one asynchronous device to another, between devices that support the X.25 protocol or from an X.25 device to one supporting the X.75 protocol.

The service will be available in the San Francisco and Los Angeles LATAs early next month, according to Dick Swoboda, Pacific Bell's director of public packet switching.

Pacific Bell filed a joint marketing waiver request with the Federal Communications Commission in January.

ATLANTA — BellSouth Enterprises has formed a new company, BellSouth Advanced Networks, Inc., to market enhanced services provided by BellSouth telephone companies, including dial access to packet switching and protocol conversion. BellSouth Advanced Networks will offer asynchronous-to-X.25 and X.25-to-X.75 conversions. It will be managed by BellSouth Enterprises Communications Systems, reporting to V.C. Jobson Jr., group vice-president.

Deregulation from **page 11**

procedures designed to prevent companies from using revenues from one venture to cross-subsidize a second one.

Chuck Jackson, a communications consultant with Shooshan & Jackson, a Washington, D.C.-based firm that specializes in regulatory issues, said although Computer III set up separate cost-accounting procedures, these procedures have not yet been fully delineated. "The separate subsidiary method is the only practical available option in the interim," he said.

Edward Phillips, a representative of Tel-Comm Contracting, a Winthrop, Maine-based interconnect, believes his company would be swept away if Fowler's concept of total BOC deregulation were to become a reality. "What you would have if you deregulated the BOCs would be a series of mini-AT&Ts that would quickly buy up small interconnects," he predicted. "There would be a finite number of companies together completely controlling the country."

Phillips claimed the North American Telecommunications Association (NATA) is doing a poor job championing the interests of companies like his own. NATA represents roughly 650 suppliers of PBXs, key systems and ancillary hardware and software. "The real action is at the state level. NATA should concentrate on regulatory issues at the state level and stop fighting dead wars at the federal level," he suggested.

Phillips argued the issue of deregulating the BOCs would likely be handled by Public Utilities Commissions on a state-by-state basis. The Maine Public Utilities Commission attempts to control competition amongst customer premises equipment vendors, he said.

Donald Dittberner, president of Bethesda, Md.-based Dittberner Associates, Inc., a communications market research and consulting firm, predicted total deregulation of the BOCs would create a scenario similar to the state of the long-distance communications marketplace, where only a handful of carriers thrive. "Fully deregulating the BOCs would kill off a number of NATA members," he said.

> *"Fully deregulating the BOCs would kill off a number of NATA members."*

Such an action would only serve to further amalgamate the BOCs into larger and more powerful entities, he said.

An Ameritech spokesman, who requested anonymity, claimed deregulating the BOCs to allow them to compete with interconnects for hardware sales would be detrimental to the interconnects. When asked if these interconnects would prosper by acting as Centrex and customer premises gear sales agents for the BOCs, he replied: "I think the interconnects would be cutting their own throats."

Albert Kramer, NATA's general counsel, said the collapse of the separate subsidiary rule would cripple NATA's efforts to position its interconnect members as sales agents for the BOCs.

If the separate subsidiary rule were eliminated, interconnects would face even tougher competition in the telecommunications marketplace, he added.

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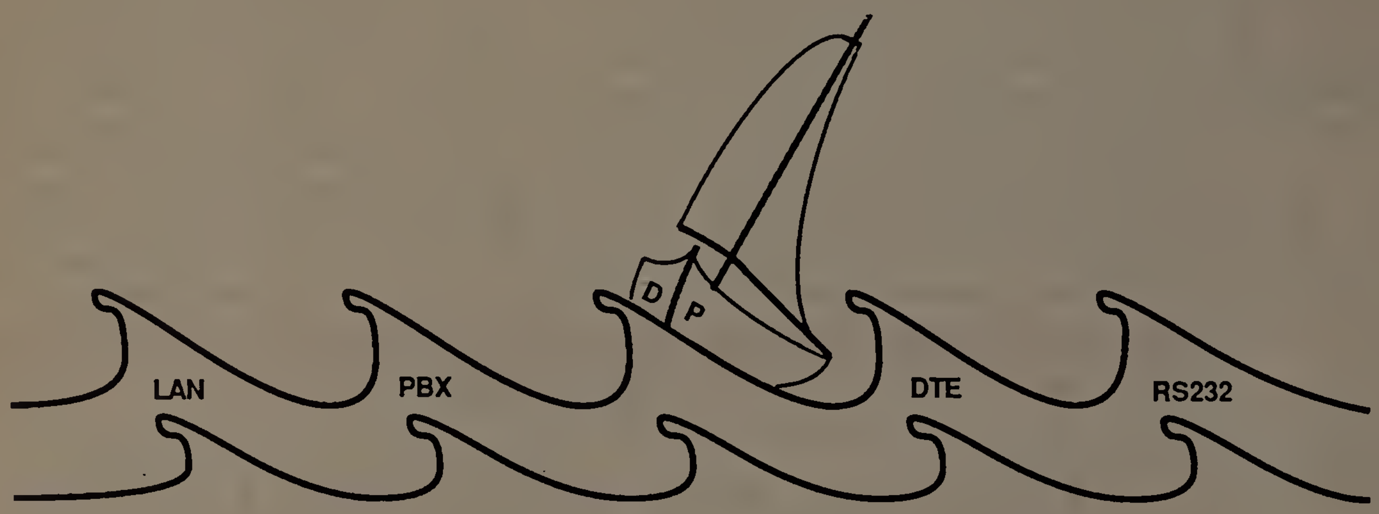

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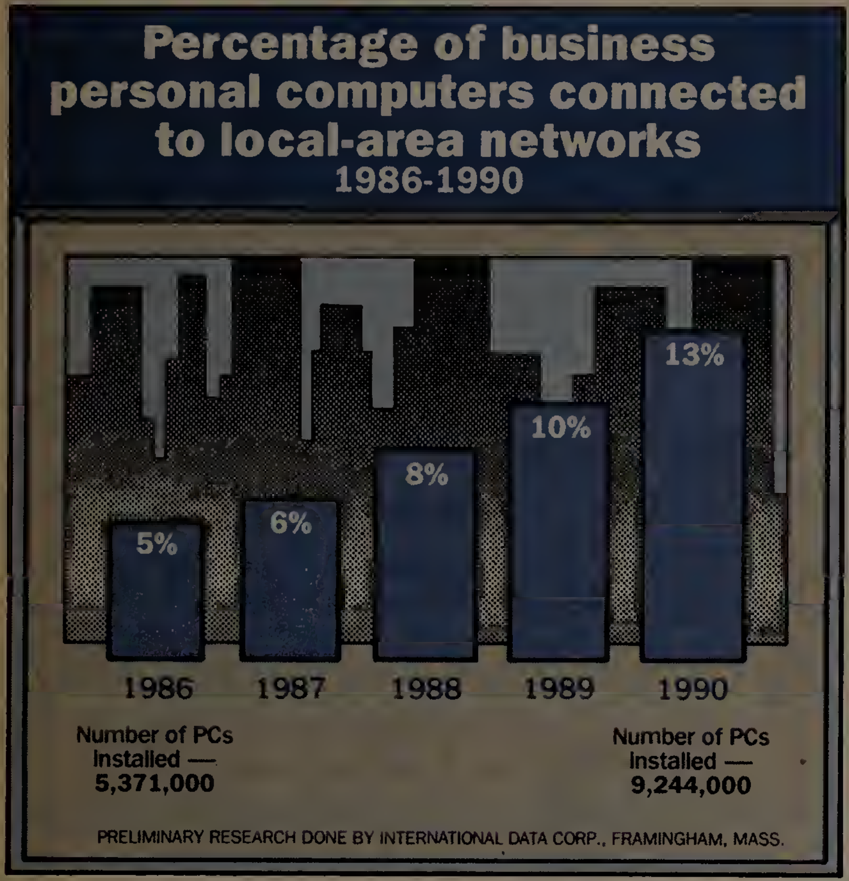
LOCAL NETWORKING

Univation touts E-mail tool

Consumers Software, Inc. last week added Univation, Inc. to the list of companies that recommend Consumers' electronic mail package for use with Ethernet-type local networks. AT&T, Tandy Corp. and Sytek, Inc. have already licensed Network Courier as the standard E-Mail program for use on their network systems.



Percentage of business personal computers connected to local-area networks
1986-1990

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▶ LOCAL NET FORECAST

Baby boomers headed for a bust

Many firms will fail, others must adapt.

BY JOHN DIX
Senior Editor

Many companies born of the local network boom may go bust within the next 18 months, particularly small ventures and others that cannot or do not embrace standards, industry watchers predict.

According to some estimates, there are more than 200 vendors of Ethernet-compatible products alone. And cottage industries have now sprouted up around IBM's Token-Ring Network and AT&T's Starlan. "There is no way all of these companies can survive," said Eric Killorin, president of Andover, Mass.-based Hyatt Research Corp., publisher of "PC Netline," an industry newsletter.

In the coming shakeout, companies will fail, merge with others or form strategic alliances. A handful of independent network makers will survive in a market dominated by system integrators, companies that sell,

See **Shakeout** page 16

▶ ETHERNET INTERFACES

Micom adds to link clan

BY JOHN DIX
Senior Editor

BOXBOROUGH, Mass. — Micom-Interlan, Inc. announced three additions to its family of Ethernet network interfaces last week, including a board-level device for Digital Equipment Corp. MicroVAX minicomputers that enables 32 terminals to be supported through a single network connection.

The MicroVAX board works in conjunction with the new NTS100, an 8-port asynchronous interface that supports the Department of Defense's Transmission Control Protocol/Internet Protocol (TCP/IP) or Xerox Corp.'s Xerox Network Systems protocol.

The NTS100 enables eight asynchronous devices to operate concurrently through a single Ethernet connection. Use of virtual circuits enables each NTS100-attached device to maintain up to four concurrent sessions. Software is loaded using mini-Featurepak plug-in cartridges or downloaded from a DEC

See **Micom** page 16

▶ BENCHMARK BATTLE

Novell loads for LAN Shootout against 3Com

BY JOHN DIX
Senior Editor

OREM, Utah — Local network maker Novell, Inc. threw down the gauntlet last week, challenging 3Com Corp. to a one-on-one performance competition next month — an event otherwise disguised as a Novell-hosted seminar about the validity of benchmark tests.

Novell's challenge is in response to ads 3Com has run in this and other trade publications saying its 3+ network operating system outperforms Novell's Advanced NetWare when used on an IBM Personal Computer configured as a server.

The so-called LAN Shootout is scheduled for high noon on Dec. 2 at the Santa Clara, Calif., convention center. Seminar speakers will address "techniques and products that have been developed to provide consistent, reliable benchmark test results," Novell reported.

The company will also perform "on-the-spot benchmarks" between Netware and 3+, although the particulars of the test — including hardware configuration — were not available at press time.

In its response to the Novell invitation, 3Com said the Shootout ap-

See **Shootout** page 16

LANMARKS
JOHN DIX

As network prices dip, the competition heats up

Although the cost of personal computer network interfaces has dropped over the last few years, the $500 to $900 price tag of some boards is beginning to look ridiculous in light of the fact that Hyundai Electronics of South Korea is expected to release a $695 IBM-compatible micro at Christmas.

Many of the leading network manufacturers have already gone on record as saying they expect network prices to dip dramatically next year and continue to slide until the end of the decade.

According to one estimate, manufacturing technology will lower retail board costs from roughly $695 today to $395 in 1987 and $195 in the 1988 to 1989 timeframe.

Although price is only one component of network competition — with users typically giving higher purchase priority to factors such as functionality and ease of use — as the hardware portion of the local network market enters the commodity stage of its growth, vendors will be forced to reduce their costs as much as possible.

Technology is only one of the methods available to drive down costs.

Offshore manufacturing, as the Hyundai micro demonstrates, would also slash prices. And as competition heats up, expect the network vendors to explore options to cut distribution costs. One obvious alternative is mail order.

Taken together, these converging forces will, first, make it imperative for network vendors to reduce the cost of hardware manufacturing, and second, reduce retail product prices, although not necessarily in that order.

Hard times for price slashers

As cost differences erode, the companies that have tried to differentiate themselves strictly on price will fall on hard times. The $700 range between network interface boards found today may eventually be reduced to $100. That amount will do little or nothing to sway user purchase decisions.

While some users will find micro network solutions more attractive because of the price erosion, the cost reduction is more of a gift to customers than a godsend. At the very least, the pricing gyrations will bring the cost of the products more in line with the micros they are intended to be used with.

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T-1 Open Systems Integration (OSI)—A Technical and Strategic Review

Leader: Harold C. Folts, Executive Director, OMNICOM Inc.

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T-2 ISDN—Status and Developments

Leaders: James G. Herman, Director, and Mary A. Johnston, Senior Consultant, Telecommunications Consulting Group, BBN Communications

In this tutorial you'll learn what ISDN will and won't deliver in the late 1980s, what the emerging ISDN standards will mean in terms of new services and improved network performance, what holes still exist in the standards and trials, how to make smart buying decisions while keeping open your options for ISDN compatibility, and more. *Level:* Intermediate.

T-3 Strategic Planning for Corporate Information Networks

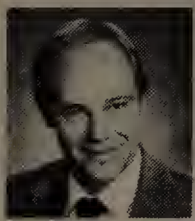
Leader: Dr. Howard Frank, Howard Frank Associates

Attend this tutorial to learn how to relate vendor offerings and technological trends to your organization's needs and requirements, and to develop a framework to plan future services and systems. You'll examine current issues in network integration, why communication departments must function as "mini telcos," and the pros and cons of software defined networks and private dedicated networks. *Level:* Introductory–Intermediate.

T-4 Planning and Designing Networks with the New Technology

Leader: Dr. John M. McQuillan, President, McQuillan Consulting

In this intensive seminar, you'll get acquainted with the key architectural principles used by today's leading network planners. You'll review emerging technologies such as T-1 networks, hybrids, VSATs, gateways between SNA, LANs and X.25, micro-mainframe links, and intercompany networks. You'll learn how to plan a corporate network using advanced technologies. *Level:* Advanced.



T-5 Building the Network Management and Technical Control Facility

Leader: Gabriel Kasperek, President, Kazcom Inc.

This one-day course will help you understand the strategic value of network control, explore alternative technologies for managing your network, and discover how to evaluate current technologies for use in your own organization. You'll become familiar with the test equipment you need for successful network control, and understand industry trends and future directions. *Level:* Introductory–Intermediate.

T-6 Designing Voice and Data Networks Under the New Tariffs

Leader: Robert L. Ellis, President, The ARIES Group Inc.

Take this tutorial to learn the structure of the post-divestiture tariffs, the latest January 1987 changes to these tariffs, how to price interstate private lines, how to configure and price interstate FX services, the new economics involved in configuring data networks, the LATA-pure strategy, and more. *Level:* Intermediate.

T-7 Managing the Telecommunications Resource

Leader: Gerald P. Ryan, President and Founder, Connections Telecommunications Inc.

This one-day course briefs you on how to develop a successful management environment. You'll learn what tools are available to do your job more professionally, how to plan a network management center, how to staff and train the department, and how to prepare and substantiate departmental budgets. *Level:* Intermediate.

T-8 IBM Token-Ring Versus Other LAN Choices

Leader: Dr. Kenneth J. Thurber, President, Architecture Technology Inc.

This tutorial gives you an across-the-board overview of announced products, future plans, compatible products, and IBM's overall strategy with respect to Token-Ring technology. You'll discuss the Token-Ring's relationship to IEEE 802.5, the IBM cabling systems and hosts, get an in-depth look at NETBIOS and APPC/LU 6.2 interfaces, and more. *Level:* Intermediate.

T-9 VSAT Technology and Implementation

Leader: Dr. Jerome G. Lucas, President, TeleStrategies

Learn the basics of applying very small aperture terminal (VSAT) satellite communications to your networking needs. You'll get acquainted with basic application requirements in SNA networking, data broadcasting, PC networking, video broadcasting, and teleconferencing. *Level:* Intermediate.

T-10 IBM's Systems Network Architecture (SNA): A Detailed Road Map

Leader: Daniel Zatyko, President, Zatyko Associates

Enroll in this intensive one-day tutorial to understand the evolution of SNA, and learn fundamental SNA concepts—the seven SNA architectural layers, SNA's physical and logical addressing, strategic SNA products, components of NetView, Token-Ring networks, functionality and capabilities of the LU 6.2/APPC and NETBIOS interfaces, and more. *Level:* Intermediate.

T-11 An Introduction to Data Communications Today

Leader: Gary Audin, President, Delphi Inc.

This course introduces you to the basic concepts, terminology and technology of data communications. You'll learn how various networks operate and how to select them; how best to interconnect computers, terminals, and PCs using different protocols; and what software is necessary to support protocols and network management. *Level:* Introductory.

T-12 Understanding the Communications Regulatory Environment

Leader: Richard E. Wiley, Senior Partner, Wiley, Rein & Fielding

Enroll in this tutorial to learn how telecommunications policy is made and changed, what agencies are active in policy making, how industry segments are affected by current policies, what key issues are now under consideration, and how you can influence future decisions. *Level:* Introductory.

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Shakeout from **page 13**

service and support systems that include hardware, software and wire. These companies will often be the major computer vendors.

Shakeouts are a natural and predictable phenomenon of high-technology industries, though it's difficult to say when and how they will happen, according to Terence Bentley, director of data communications research at the Yankee Group, a research and consulting firm in Boston. Bentley said the Yankee Group has identified three high-technology market growth stages:

- Stage 1 is very technology-oriented and typified by the market entrance of a few players, many promises and a dawning recognition of the need for standards.
- The market begins to mature in Stage 2, which is marketing-oriented, a period when expectations are adjusted, many trailing-edge start-up companies spring up, standardization begins and signs appear that underfunded or technologically weak entrants will fail.
- By Stage 3, a commodity market has developed, vendors are competing on margins, mergers and acquisitions are prevalent and the few solid remaining players are sales-oriented.

The local networking market is late in the second stage, on its way to being a commodity marketplace, Bentley said. To put it in perspective, the market for optical disk data storage devices is in Stage 1, and modems are third-stage commodity items.

Eventually, commodity market pressures will focus all network development on three technologies, according to Doug Gold, a senior communications analyst with International Data Corp., a Framingham, Mass., research and consulting company:

- IEEE 802.3 Ethernet 10M bit/sec coaxial cable nets;
- IEEE 802.5 IBM-like 4M bit/sec token-ring networks that use twisted-pair wire;
- And IEEE 802.3 1-Base-5 nets, the standard for Ethernet-like networks that use twisted-pair wire, operate at 1M bit/sec and are typified by AT&T's Starlan.

"You can't fight these standards," said Dave Terrie, editor of "Patty Seybold's Network Monitor," an industry newsletter. "Companies that don't support them will have to switch. Not all of the vendors will be able to do that."

As the industry settles into these product sets, procurement practices will be elevated, working in the favor of computer vendors. "The marketplace is moving toward vendors that can provide solid service and support and can adapt to the major vendor environments most effectively," Bentley said. "IBM, Digital Equipment Corp. and a few other major vendors will control this commodity world."

Of the others, "A great deal, if not the majority, will not survive," according to Clare Fleig, director of systems research at International Technology Group, a research firm in Los Altos, Calif. "Corvus [Systems, Inc.] almost hit bottom earlier this year. As 1987 wears on, we will see quite a bit more suffer the same fate," she said.

Killorin said he believes "There will be six or eight independents dominated by companies like Novell, [Inc.] and Banyan [Systems, Inc.], and then there will be the system vendors like DEC and IBM."

Bentley agrees. "Companies like Ungermann-Bass, [Inc.], Novell and 3Com [Corp.] will do well, but a lot of the business is going to return to the IBM world," he said. "If you are an MIS manager you are going to buy from the vendor that makes your MIS equipment perform the best."

Opinions differ about how and when the local network shakeout will occur. According to Terrie, products will disappear faster than vendors, but the end will come slowly for failing companies because they will be able to feed off their installed base for some time.

Frank Dzubeck, president and chief executive officer of Communications Network Architects, Inc., a Washington, D.C. consulting firm, believes the market will suffer "serious fallout" in the next 18 months. Many of the smaller firms will get swallowed up by bigger companies or merge. He expects, for example, companies such as Bridge Communications, Inc. to merge with Novell or 3Com.

"When the market starts to collapse into a few large manufacturers, the vendors that can't grab a hold onto someone will disapear," Dzubeck said.

"It will be like musical chairs, except in this case there will be a hell of a lot more players than there are chairs."

Micom from **page 13**

MicroVAX equipped with the new INTS32/MicroVMS.

INTS32/MicroVMS provides all of the NTS100 functions on a single Q-Bus-compatible board. The device reportedly off-loads communications tasks from the host. Ports on the board can be configured independently. Access to the ports can be controlled through a multilevel password scheme.

The other product announced was the NTS470, a special version of the NTS100 intended for use in the company's line of data switches, the Instanet6000, 6600 and 600. The plug-in module supports eight connections.

The NTS100 with XNS Protocol costs $2,750, $2,900 with the Featurepak, and is available now. The NTS100 with TCP/IP support will be available in February for $2,900.

INTS32/MicroVMS costs $3,000 and is available now.

The NTS470 with XNS Protocol is also $3,000 and will be available in January. The NTS470 with TCP Protocol costs $3,150 and is slated to be available in February.

Shootout from **page 13**

peared to be more a publicity event than a presentation of unbiased information about personal computer networks, according to public relations manager Margarett Epperheimer. "We were invited to be part of a panel that is going to be moderated by Judith Clarke, Novell's vice-president of corporate communications."

In its reply, 3Com said it would only participate in a Shootout if Novell agreed to have the event: organized and chaired by an independent third party; use unbiased, thorough, meaningful and agreed-upon criteria to benchmark performance under load and typical application environments; evaluate the networks on criteria in addition to performance, including price/performance, use of industry standards, functionality, ease of use and ease of installation.

"Regardless of the outcome, the results will be controversial," according to J. Scott Haugdahl, senior systems specialist with Architecture Technology, a Minneapolis-based consulting, seminar and publishing company that specializes in local networks. Haugdahl said benchmarks can only provide a rough feel for performance differences between products and cannot simulate day-to-day operating environments. "Nobody comes up with the same benchmarks," he said. "You can always find a benchmark that will run faster on one LAN than another."

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DATA DELIVERY

> “Vendors who are trying to break into the bypass market should only attempt to bring T-1 lines to a customer's premise. Some companies are trying to take care of all of their customers' network needs. Despite all its revenue, AT&T couldn't get Net 1000 to fly. How can some of these smaller start-up companies expect to succeed by using a strategy that failed for AT&T?
>
> **Richard Tallman**
> Senior industry analyst
> Dataquest, Inc.
> San Jose, Calif.

▶ INTERVIEW

Avanti chief talks strategy

Lucci explains T-1 market tactics.

Avanti Communications Corp., located in Newport, R.I., has been selling T-1 equipment, including multiplexers and modems, since 1983 and in 1985 garnered approximately 10% by revenue of the T-1 multiplexer market. In January, the company plans to round out its product line with the introduction of a high-end T-1 switching multiplexer. Network World *Senior Editor Paul Korzeniowski recently talked with Al Lucci, president and chairman of the board of Avanti, about the new product and the state of the T-1 market.*

How important is the T-1 market to Avanti?
Our T-1 product line represents about 60% of our revenues. So you can see that it plays a critical role in the success of the company.

Which segment of the T-1 market does Avanti compete in?
Currently, we see ourselves somewhere between the medium and high ends of the market. Our Ultramux product line has a number of high-end features, such as sophisticated networking and control capabilities and a great deal of software control. Our migration path is clear: Avanti plans to go after the high end of the business. In January, we will announce a new generation of products that is clearly geared for the high end of the market.

Analysts have criticized the Ultramux's network management capabilities and its inability to do sophisticated switching and routing for a large number of T-1 lines. Will the January announcement address these shortcomings?
In terms of network management,

See **Avanti** page 18

DATA DIALOGUE

PAUL KORZENIOWSKI

Data dialogue ditties: rumors and ruminations

Got the fever, yeah, we got the fever. The acquisition rumor mill is furiously grinding away these days. Every company president says he is on the lookout for a purchase. Vendors doing well in one segment of the data communications market are attempting to broaden their product lines and supply customers with one-stop shopping. A few companies, such as Digital Communications Associates, Inc., Timeplex, Inc. and Infotron Systems Corp., already possess a fairly complete line of products.

Other companies are trying to follow suit. Many T-1 multiplexer manufacturers are looking to add low-speed multiplexers and packet assembler/disassemblers (PAD) to their product lines. In a couple of years, there may be few firms left specializing in these market segments.

Interestingly, the move to one-stop shopping may be vendor-driven rather than user-driven. In a recent study by Market Information Center, Inc., a Marlborough, Mass., research firm, users listed the ability to supply one-stop shopping as a low purchase criteria. Items such as product reliability, customer support and ease of usage were deemed more important considerations.

No urge to merge. Recently analysts tagged two companies doing well in their respective markets as merger candidates. Telematics International, Inc., which makes PADs, and Network Equipment Technologies Co., a high-end T-1 multiplexer manufacturer, were reportedly contemplating marriage.

Both companies steadfastly denied the rumor, but Telematics admitted that talks between high-level executives had been taking place. Customers with both companies' products had asked the vendors to look into ways of integrating both network management systems.

The rumors may have been nurtured because both companies are thinking about making their initial public offerings and may have been traveling in the same Wall Street circles. Also, a few venture capital firms invested in both companies; at least two people sit on both companies' board of directors.

***Top Gun*: I feel the need, the need for speed.** Large IBM shops are running into a host of problems as they attempt to complete high-speed, bulk file

See **Ditties** page 18

▶ 9000 SERIES ACCESS

HP builds IBM links

PALO ALTO, Calif. — Hewlett-Packard Co. recently unveiled a family of hardware and software products that enables HP 9000 Series systems to access information stored on IBM hosts.

HP introduced two products, each available in three models. The HP UX SNA Link enables an HP 9000 to emulate an IBM 3274 controller and establish sessions with an IBM host. The link includes a synchronous RS-232 interface for a remote connection.

The three models of the HP UX SNA Link differ in the number of sessions they support. The low-end model supports two sessions, while 32 users can work with the second model.

A third model acts as a gateway for a number of HP systems on an Ethernet local-area network and supports up to 50 sessions. In this configuration, the HP processor can simultaneously process gateway sessions and application programs.

HP said file transfers between an HP and an IBM system do not require operator intervention because HP uses IBM's Systems Network Architecture block-mode transparent terminal emulation.

The second product, HP UX SNA 3270, works with the HP UX SNA Link and supplies terminal emulation capabilities. With the package, devices attached to an HP system can emulate an IBM 3278 display station or IBM 3287 printer.

The three versions of the emulation software differ in the systems that they run on and the HP UX SNA Link model that they work with. One model runs on an HP 9000 Series 300 workstation and can be used with any HP UX SNA Link package. The second runs on an HP 9000 Series 300 and requires the third HP UX SNA Link package. The third runs on an HP 9000 Series 800 and also requires the gateway package.

The products' prices range from $3,000 to $11,900.

▶ DATA SWITCH CORP.

T-3 channel link bows

BY PAUL KORZENIOWSKI
Senior Editor

SHELTON, Conn. — Data Switch Corp. expanded its line of channel-to-channel extenders with a new model that can work with T-3 transmission facilities.

Recently, a number of large IBM customers have experienced problems transmitting data at high speeds. Problems arise when customers have to link two host systems placed in different locations. These customers are experiencing bottlenecks in VTAM, IBM's teleprocessing software, and in IBM front-end processors.

Channelnet 9055 enables a customer to bypass these bottlenecks. Rather than requiring data to pass through a front-end processor, the product links two IBM host systems through a host block multiplexer channel connection.

Block multiplexer connections support a transmission speed of 3M byte/sec. They are often used to link hosts in proximity but have a distance limitation of a few miles.

Interfaces such as the Data Switch product can overcome the distance shortcoming. The interfaces enable block multiplexer channels to work with facilities such as those supporting T-1, which transmit data at 1.54M bit/sec, or T-3. These facilities do not have any distance limitations.

The product costs $190,000. ◪

Ditties from **page 17**

transfers. IBM has told some of its most influential customers that products that solve these problems will not be available for at least four or five more years.

That long time frame has left the door open to both hardware and software vendors. Hardware vendors such as Network Systems Corp., NCR Comten, Inc., Lee Data Corp. and Data Switch Corp. are selling products that support physical connections operating at speeds from T-1 to T-3.

Software vendors are marketing products that are easier to use than IBM's Bulk Data Transfer Facility. The Systems Center, Inc., a start-up located in Richardson, Texas, has a package that currently is able to work with T-1 and T-3 connections. The company, which was formed by former IBM executives, is building an impressive list of customers, including E.F. Hutton & Co., Inc.

Where LANs and soap meet. Competition in the local network market is heating up. Novell, Inc. and 3Com Corp. are waging a childish advertising war with both companies claiming to offer the fastest network in the West.

Analysts expect vendors to start cutting prices in order to increase market share and put some heat on competitors. Predatory pricing is typically associated with commodity items, such as soap, not technical products. However, in the last year, microcomputers became commodity items as low-cost IBM Personal Computer clones, manufactured in Asia, flooded the U.S.

Howard Frank, president of Howard Frank Associates, Inc., a Washington, D.C. consulting firm, said it may be a bit premature to start talking about local nets as commodity items, but personal computers became commodities much sooner than he anticipated. ◪

Avanti from **page 17**

we think our system, which was announced six months ago, is as good as any competing system. For a public network, our product is capable of switching and routing through a [Digital Access and Cross-Connect System]. In a private network, we agree that we do not have some of the switching and routing capabilities that other vendors have. The January announcement will address that area, and differences between other vendors' offerings and ours will disappear.

How rapidly is the T-1 market growing?
I think it is growing more slowly than some people expected. There were estimates that more than $200 million worth of equipment would be sold this year, but that hasn't happened. Year end revenue will be in the $150 million to $170 million range [for all T-1 vendors]. One reason for the slower growth rates is AT&T began offering services to a degree that has confused the customer base. Also, customers have become much smarter about what they buy. They are looking very carefully at all products. Customers have a wider choice, and there are more things to consider, so the purchasing cycle has been lengthened.

How has the market changed in the last few years?
The most significant change is the movement toward making T-1 multiplexers compatible with various telephone services. In 1983, when T-1 first became a hot item, vendors developed many proprietary framing techniques. Currently, compatibility with the public network has become an important issue. AT&T is offering services that require compatibility with its net.

Without some degree of compatibility, users can't take advantage of services such as Megacom 800, Software-Defined Network and Customer Controlled Reconfiguration. AT&T does not want to be just a link provider because the company understands that it receives a lot of revenue from enhanced service offerings. In the future, there will be more of these services. So, it is becoming mandatory that T-1 equipment abide by public network standards.

In concert with AT&T's move for additional revenue, the Federal Communications Commission in its Computer Inquiry III published the Open Network Architecture requirements.

In the future, ONA will be extremely important because it provides standards that all carriers will abide by. With ONA, a user will be able to hop from one carrier to a second and that move will be transparent to the network. The drive to ONA is yet another movement toward network compatibility. These shifts will put pressure on the equipment providers and force them to provide some type of compatibility.

If customers have that much interest in enhanced services, shouldn't they just let AT&T run their entire network?
People with private networks like being independent of AT&T. Equipment providers are supplying good network management systems and users feel they are able to respond much faster to their network problems than AT&T can respond. They don't want to go back to calling the Bell system every time there is a problem or they need service.

How will you broaden your product line?
There are two approaches one can take. One is internal development. The second is some OEM agreements. For faster market penetration, we will use some OEM products.

Are acquisitions possible?
We are thinking about acquisitions as well. In the past, we have looked at some companies but none met our requirements.

What are those requirements?
The company would have to possess a digital communications line able to multiplex data at low rates or enhance our high-end offerings. The company would have to have both voice and data capabilities in the digital area.

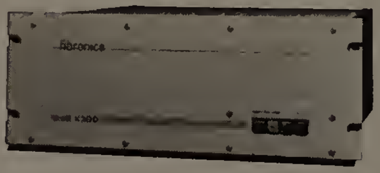
How large is Avanti's service team?
We have 20 service people and they are located both at our corporate office and throughout the country.

How important are your international sales?
International sales are not really part of our business. Our international sales are done by our OEM partner, Codex Corp. At this time, we have no plans to make any kind of a push into the international market.

Do you run up against Codex in the domestic market?
On occasion, we do end up competing with them. In some cases they win, and in others we do. ◪

Link IBM Mainframes (VM or MVS) *directly* to Ethernet

Complete system solution. Fibronics' K200 Ethernet control unit and KNET Software Package handle all communications from your IBM mainframe to the Ethernet. ☐ **Easy to install.** The system connects directly to the IBM Block Multiplexer channel and to the Ethernet using standard cables. Set-up time is less than an hour! ☐ **It's Fast!** System data throughput is 2.5Mbps. File transfer rates are up to 100Kbps. ☐ **TCP/IP standards** tie your PCs, work stations or ASCII terminals into a common network. ☐ **Uses SNA** to communicate with any other IBM host on the network. ☐ **Easy to maintain.** The Fibronics K200/KNET System has extensive built-in diagnostics, and can be taken off-line without disrupting mainframe operations.



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COMMUNICATIONS MANAGER

> “See downtime in terms of hours, not percentages. What does 98% system availability mean? If your network runs 24 hours a day, seven days a week, that means 176 hours of downtime a year, not counting scheduled downtime for maintenance and so on. Getting to 99.9% availability means 35 hours of downtime. The important question is what it costs to get higher availability vs. the cost of downtime.
>
> From **“Telephone Angles”** newsletter
> United Communications Group
> Bethesda, Md.

▶ INTERVIEW

Group bridges diversity

AACT president speaks on joint user/vendor coalition.

For years, communications users have organized to form vendor-specific users groups; now, a new “generic” communications association aims to bring together a diverse coalition of users, vendors, educators and consultants.

The Association for the Advancement of Communications Technology (AACT), which currently boasts 35 members, held its first user/vendor panel this fall. The organization was conceived by William Grolli, associate vice-president for development at the State University of New York (SUNY) at Farmingdale. Grolli envisions AACT as a forum for members to exchange information about technical advancements and applications in the telecommunications industry, as well as issues of common concern.

AACT is planning seminars, conferences, workshops and possibly trade shows. Users are offering to show other members what they're doing with their telecommunications systems, how they're saving money and ways to avoid pitfalls they've encountered. Some major carriers have promised association members tours of their switching facilities. AACT will also make suggestions for SUNY's undergraduate communications program, which will start in the fall of 1987.

Network World *Staff Writer Nadine Wandzilak recently discussed the organization's membership, goals and strategy with AACT President Michael Lackey, a communications consultant with New York-based Systems & Marketing Applications and an adjunct professor at SUNY.*

Who are some of the members of AACT?
We have vendor companies such as Rolm Corp., Nynex Corp., New York Telephone Co., Contel Information Systems, Inc., NEC Corp. and US Sprint Communications Co.; universities such as SUNY Farmingdale and Columbia University; users like Equitable Life Insurance Co. and Merrill Lynch & Co.; as well as government bodies such as Suffolk County, N.Y.

What is the relationship between AACT users and vendors?
In the beginning, users were concerned about AACT being controlled by vendors. We decided we were not going to allow an overabundance of vendors to come in and simply use this as a selling platform. Competing vendors on the AACT board of directors police themselves. In our discussions, we ask panelists to avoid specific mention of vendors. We want to talk about generic situations.

See **AACT** page 22

GUIDELINES

ERIC SCHMALL

Escalation procedures as a safety net

“Without problems, the day would be over at 11 in the morning,” observes a character in Neil Simon's play, “Biloxi Blues.”

Communications managers will attest to the truth of that statement. Encountering and clearing communications problems account for a significant portion of a manager's daily activities. Varying in size, frequency and complexity, most troubles are cleared through the normal course of routine procedures.

However, despite this comforting thought, managers occasionally have to face the specter of a problem that defies regular methods of repair.

It may be a critical piece of hardware that keeps failing despite numerous repairs or a circuit that intermittently drops data or voice signals and cannot be restabilized. It is, in short, any prolonged or erratic disruption of any service upon which users normally depend.

Whatever the specific instance, it defies regular clearance expectations. As a result, user patience evaporates quickly. The problem mutates into a crisis, and the manager is faced with escalation of the situation with the product or service vendor. If no formal escalation procedure exists, however, the frustration of the unsolvable only increases.

The manager has to become familiar with the organizational labyrinth of the service or product provider, for instance, by finding out who reports to whom, what responsibilities are inherent at each level, phone numbers and locales.

> *“When a problem's resolution eludes normal repair, it's time to alert people that more resources are needed.”*

Then the manager has to select the proper person to contact, and he may have to introduce the worsening situation to people he doesn't know.

At the same time, the manager runs the risk of alienating the levels of the organization with whom he normally works if they perceive that he is trying to circumvent their normal protocols. At a time of deepening crisis, who needs this worry?

All of this can be avoided if the communications department establishes a formal escalation procedure with its major service and product providers. Escalation policies identify several important aspects of problems: definition, hierarchical layers and protocols.

When a problem's resolution eludes normal repair procedures, it's time to alert people that more resources are needed. An escalation agreement hinges upon the understanding of what constitutes various levels of outage severity.

See **Problems** page 22

Schmall is network systems manager for an insurance holding company.

ASSOCIATIONS

The Energy Telecommunications and Electrical Association (ENTELEC) will hold its annual meeting March 15 to 18, at the Albert Thomas Center in Houston.

ENTELEC is an industry users group comprising communications managers in oil, gas and other energy-related companies. The companies in this fieldtypically run telecommunications networks that operate along pipeline routes and microwave facilities, connecting offshore sites.

The group was founded in 1928 and considers itself the country's oldest communications users group.

Originally called the Petroleum Industry Electrical Association, ENTELEC currently functions primarily as a technical and educational body.

In the past, the group has been a driving force behind regulatory reform — most notably in the microwave arena.

Wanted: *If you are a recently promoted communications manager or if a member of your technical staff has changed positions,* Network World *would like to hear from you. Please send name, new title and information describing present and former positions to* Network World, *375 Cochituate Road, Box 9171, Framingham, Mass. 01701.*

ON AT&T'S "HIGHWAY 3B" THERE ARE NO LIMITS ON WHERE YOU CAN GO WITH COMPUTERS.

Like it or not, the multi-system environment is here to stay. Mainframes will be mainframes. PCs will continue to proliferate like mosquitoes. And user needs will change every day.

It is high time somebody created a family of computers for an evolving mixed-system environment. The time is now. The "somebody" is AT&T.

Our 3B computer family is among the first to blend the technologies of data processing and communications. Result: a unique ability to distribute processing power across system lines, from user to user, desktop to department, and department to mainframe.

AT&T's 3Bs are easily linked *up* to IBM* mainframes and *down* to any combination of terminals, peripherals, and MS-DOS** PCs. The idea is to open communication between

COMPUTERS WITH THE FUTURE BUILT IN

3B2/310. Supports up to 14 users, 18 RS232C ports. Speed: 1.1 MIPS, 32 bits at a time. *All* 3Bs are 32-bit machines. Storage: 86MB internal hard disk; up to 516MB with Expansion Modules.

3B2/400. Supports 10 to 25 users, 46 RS232C ports. Speed: 1.1 MIPS. Storage: 172MB internal, to 860MB with Expansion Modules.

3B2 XM. Expansion Module adds 23MB cartridge tape storage and/or 30 to 72MB hard disk storage.

3B15. Serves 16 to 60 users, 128 RS232C ports. Speed: 1.6 MIPS. Supports 8 drives, with maximum storage of 2.7 *giga*bytes.

Not shown: Other members of AT&T's 3B computer family serve up to 100 users, across a wide range of business needs and environmental conditions.

© 1986 AT&T

systems—without forcing users to give up the applications they know and trust.

In most offices, the effect on productivity is electric.

"THESE GUYS THINK OF EVERYTHING."

The 3B's role in a distributed data processing environment can grow and change as your business evolves. For starters, UNIX™ System V permits the same software to run on a variety of machines, protecting your investment in applications and user training.

On the hardware side, the whole 3B family is like a big set of building blocks. Everything is modular. A system of feature cards and interfaces makes it easy to add functions or peripherals. Or add users. Or boost performance. Or all of the above—in any order, at your own pace.

Example: A 3B "starter" system that is cost-efficient for 6 users can easily grow to serve 60 users—and more—with the same efficiency. By networking 3B to 3B you can support *thousands* of users—like adding beads to a string.

Whether those "beads" are down the hall or an ocean away, AT&T's networking tools can swiftly unite them all into a single, flexible, responsive system.

WHERE ARE YOU GOING?

AT&T's 3B family was created *as a family* to enhance the systems you have today, without imposing limits on where you can go tomorrow.

You can start with the pieces you need to solve today's problem: linking mainframe and desktop, say; or pulling together a department. As your needs and ambitions change, so can your system. AT&T makes the pieces fit.

To learn how much we can do for your company today, and how far we can take you tomorrow, please contact your AT&T Account Executive, authorized supplier, or telephone 1 800 247-1212.

*IBM is a registered trademark of International Business Machines Corp.
**MS-DOS is a trademark of Microsoft Corporation.

AT&T
The right choice.

Problems from **page 19**

For example, one measure might be the total number of hours a system or component is disabled. Another parameter might emphasize the frequency of outages over a specific period of time. Or it might depend on the number of productive users affected. Regardless of the form, the definition needs to contain clear, tangible demarcations of severity.

Equally vital in this process is a clear understanding of the organizational structure and key people in the various positions of that hierarchy who will become aware and involved when a predefined level of crisis is reached.

Both the user and the vendor must have an abbreviated chart showing names, phone numbers and reporting relationships of each other's structure in order to expedite the flow of information if higher levels must become involved in system restoral.

Because these charts reflect only specific snapshots of dynamic organizations, the manager needs to ensure that they are kept current.

Once the rules are established for defining an abnormal situation and the players are recognized, it is necessary to set up the final component — protocol.

This involves negotiating who will contact whom and under what specific circumstances. Most people will assume that problems will escalate step by step, up the organizational chain of command.

Nevertheless, it is important for the user organization to understand its own internal escalation procedures and to try to dovetail these into the correct levels of the vendor organization.

Some agreements may allow for the communications manager to call successively higher levels in the vendor's company. Others, however, may want the manager to escalate the problem internally so that specific corporate officers contact their appropriate counterparts in the vendor organization.

Of considerable importance in this code of communications is the agreement that no layer of either organization will be purposely bypassed.

This principle will at least give tacit acknowledgment to the fact that no one wants to "end-run" the other side by leapfrogging past important players.

The concept involved in protocols is to minimize the ego bruising that can occur when two organizations are trying to communicate.

Escalation procedures provide an effective insurance barrier against those times when problems escalate to threatening proportions. They provide for faster application of extraordinary focusing on abnormal outages without damaging the relationship between vendor and user.

They also give the communications manager an important safety net not only for system restoral but for career stability as well. ☐

HELP IS ON THE WAY...

THE SOFTWARE connection

IF you buy and use communications software and find the options overwhelming...or,

IF you sell communications software and you're looking for an effective way to reach buyers...help is on the way.

It's called The Software Connection, The 1987 Communications Software Planning Guide. And it will appear in *Network World's* December 15 issue.

Don't miss this pull-out blockbuster section!

NETWORK WORLD

A PUBLICATION OF CW COMMUNICATIONS

AACT from **page 19**

How do you avoid dominance by any one group within AACT?
In our membership, we are striving for a mix of 35% each of users and vendors, 25% academics — management, faculty and students — and 5% consultants. Each group is allocated a certain number of seats as officers and directors.

What kinds of programs will be offered to meet your audience's diverse needs and interests?
We created an industry forum to make it easier for the different groups within the organization to meet. We had a panel discussion about preparing Requests for Proposal (RFP) that featured representatives from Rolm, NEC, US Sprint and Merrill Lynch; as well as Chet Bellairs, communications manager for Capital Cities ABC, Inc. and president of the International Communications Association.

Give an example of a user/vendor exchange.
A user sometimes forgets to include items in an RFP. Later, the user asks, "Can I have this at cost? I forgot about it." Or, "I asked for a system that would do the job, but I wasn't told that the system didn't have things I might need tomorrow. So I bought one that appeared to be a good price but then had to spend hundreds of thousands of dollars more to get a system that worked."

The vendor says, "You're right. It's only fair to you as a user that I explain these things more clearly."

What draws members to AACT?
They're looking to gain education. They're also looking to find employees.

What other programs do you have scheduled?
On Dec. 9, we'll talk about how to read your business telephone bill and how to make the best use of long-distance services now and in the future. The discussion will feature people from AT&T, MCI Communications Corp., US Sprint and Nynex. Technical or marketing people will review current systems and what might be coming down the pike.

For more information, call Michael Lackey at (516) 420-2288. ☐

NEW PRODUCTS AND SERVICES

Coming up in the Dec. 15 issue:
▶Service focus on communications software development services

▶ DATA SWITCHING

Infotron ties voice, fiber into switches

Itron division unveils 16-, 32-port stat muxes.

BY JIM BROWN
New Products Editor

CHERRY HILL, N.J. — Infotron Systems Corp. recently introduced adapter cards that allow voice lines and fiber-optic devices to connect to its INX 4400 data switch or INX 4200 matrix switch. The firm also released enhanced software that provides system administration help screens and port contention queuing information.

Also, the firm's Itron division introduced the 16-port Commander 16 and 32-port Commander 32 statistical multiplexers for point-to-point and multipoint applications.

Infotron, which captured a 13% share of the data switch market and a 7.1% share of the matrix switch market in 1985, according to Framingham, Mass.-based International Data Corp., said it designed the products to meet the growing demand for support of fiber optics. "Fiber optics are becoming more popular. With the fiber-optic adapter, we give users the ability to access and use fiber optics," said John Mazzaferro, systems marketing manager.

Infotron's 4-channel PCM Voice Channel Adapter, dubbed the 4VP4, supports connection of up to four 64K bit/sec voice-grade channels to the INX switches. Employing pulse code modulation, the 4VP4 supports analog voice and digital data transmission over standard four-wire phone connections, with or without ear and mouthpiece signaling.

According to Mazzaferro, the 4VP4 card can connect telephones to the INX switches. In order to access the public switched network, the voice lines need to be connected over a tie line to a private branch exchange, he said. Otherwise, the card could create an intercom path to other similarly equipped INX switches or provide dial-up data connections to a modem pool.

With a T-1 link module, the 4VP4 will connect four 64K bit/sec voice lines to a dedicated T-1 circuit, allowing for the integration of voice and data over a dedicated link, Mazzaferro added. The 4VP4 also supports modem data rates of 9.6K bit/sec and a maximum of 256 cross-connects between INX switches. A 4-channel 4VP4 card will cost $2,000.

In addition to allowing devices transmitting over fiber-optic cable to connect to an INX switch, the firm's T-1 Fiber Optic Adapter cards can connect up to 64 INX switches over fiber-optic links in a star-configured campus local-area network. The fiber-optic adapter will support a distance of up to 2½ miles between INX switches. A T-1 Fiber Optic Adapter is priced at $2,750.

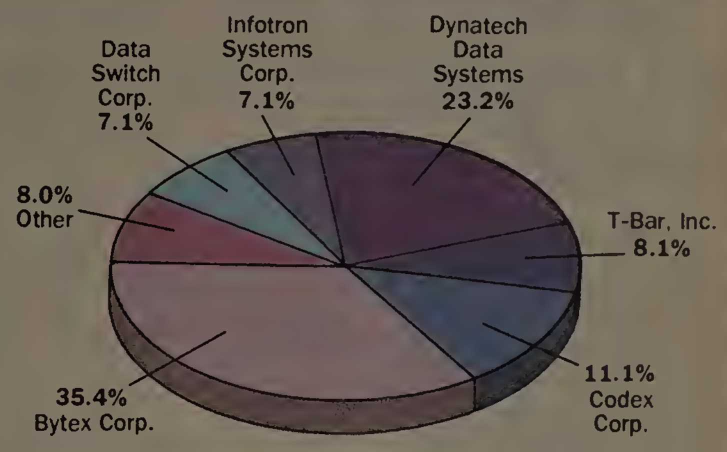
The enhanced software allows operators of the switch's administration console to access system operation help screens. The package also keeps terminal users waiting for connection to a busy port informed of their position in queue and automatically configures two, four or eight time slots on the switch's 35M bit/sec internal bus for use in high-speed synchronous or voice connections.

Both Itron multiplexers accept data at up to 9.6K bit/sec and transmit a composite link at up to 19.2K bit/sec in point-to-point applications. Either unit can be configured to provide redundancy in point-to-point applications by supporting dual composite links operating at up to 9.6K bit/sec each. The units can also be ordered with hardware to support dual composite links operating at up to 14.4K bit/sec each in multipoint applications. Another option is switching and contention software that supports switching connections between multiplexers in a multinode multiplexer network.

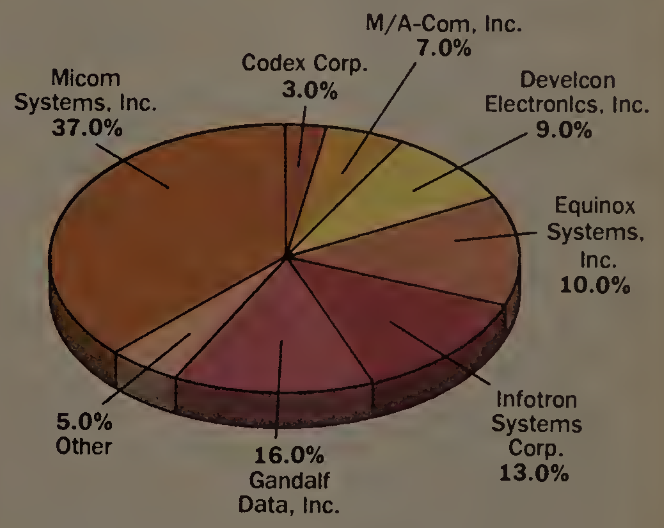
Both units come with diagnostic capabilities and employ a cyclic redundancy check error-checking scheme. Each port can be configured to receive either asynchronous or synchronous communications.

The 16-port Commander 16 ranges in price from $1,900 to $5,000. The 32-port Commander 32 ranges from $2,800 to $9,000.

Matrix switch and data PBX market shares in 1985



Total matrix switch revenue = $64,956,000



Total data PBX revenue = $73,395,000

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

Products & Services

Software for Unix MS-DOS-based PCs

AT&T recently introduced software allowing Unix-based and MS-DOS- or PC-DOS-based personal computers to communicate with an IBM mainframe without an emulation board.

Escort Connectivity Software also supports a degree of automated data processing between personal computers and the mainframe. An automatic program script generation feature allows a stored interactive session between the mainframe and personal computer to be duplicated as a program of Escort commands. The personal computer will simulate the interactive operation by running the scripted program. Data entry, batch job submission, on-line program testing, uploading and downloading of files and response time analysis are examples of interactive sessions that can be scripted.

The software has two major components, a command language that supports the program script function and a terminal emulator that makes the personal computer look like an IBM 3278 or AT&T 4548.

Versions of Escort for AT&T's PC 6300 and PC 6300 Plus personal computers are currently available for $695.

AT&T, 1 Speedwill Ave., Morristown, N.J. 07960 (800) 247-1212.

18K bit/sec full-duplex modem

Racal-Milgo, Inc. threw its hat into the high-speed, dial-up modem ring with the introduction of a device that operates at speeds of 18K bit/sec.

Racal-Milgo's RM-1822D, a full-duplex modem, features automatic dialing and answering capabilities. The product works with a superset of the Hayes Microcomputer Products, Inc. command set and can be used with a leased-line connection.

The product's network management functions continuously monitor transmission items and store the data in a buffer. A remote access feature enables central site testing and reconfiguration of a remote modem.

The modem continuously monitors line quality and has three fallback speeds. At 300 bit/sec, the product complies with Bell 103 standards. At 1,200 bit/sec, it is compatible with Bell 212A and CCITT V.22 standards. At 2,400 bit/sec, the product complies with CCITT V.22bis standards.

RM-1822D sells for $2,395.

Racal-Milgo, Inc., 1601 N. Harrison Pkwy., Sunrise, Fla. 33323 (305) 475-1601.

SOMETHING BRILLIANT JUST HAPPENED TO DATA TRANSMISSION.

Introducing Public Data Network* from the Bell Atlantic Network Services Group. A startling communications development that's just made other interactive data transmission modes seem all but obsolete.

Packet Switching goes public.

Public Data Network offers the benefits of packet switching—through the telephone network—at speeds up to 9600 bps. By batching data into electronic "packets," Public Data Network is ideal for "bursty" applications like order entry, billing, information processing, credit approval, reservations, ticket sales and claims.

Suddenly, there's a more efficient way to move data.

Our Public Data Network is, without a doubt, the most efficient way to move interactive data. Period. What's more, rates are usage-based—dramatically lower than dedicated line costs.

Introducing automatic protocol conversion.

And because Public Data Network supports X.25 and asynchronous protocols, it's the perfect link between dissimilar data processing equipment. Like office and home computer terminals and multiple data bases. It also opens the door for electronic banking and electronic shopping and a long list of other interactive electronic subscription services.

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MESSAGE-SWITCHING NETWORKS

KATE HEDGES

Pirates or Robin Hoods?

Deregulation usually conjures up visions of increased service and lower prices. In the cases of airlines and banks, deregulation has brought consumers more products and services at more competitive prices. As new businesses sprang up, the wheels of commerce were greased. Best of all, the consumer benefitted.

This is not the case with the international record carrier (IRC) industry. Since the deregulation of the industry in 1981, prices at the IRCs — RCA Global Communications, Inc., FTC Communications, Inc., ITT World Communications, Inc., TRT Telecommunications Corp. and Western Union International (WUI) — have remained virtually frozen at prederegulation levels. These giant carriers have maintained a cartel for more than 100 years and despite deregulation, continue to enjoy a collective monopoly — at the expense of the consumer.

While deregulation has liberated the IRCs to compete aggressively via increased service offerings, they are still bound to fixed prices. This is because the IRCs must share their revenue with foreign Post, Telegraph and Telephone administration (PTT) authorities, which hold government-sponsored communications monopolies. In order to complete the delivery of an overseas message, the IRCs must link up with a foreign PTT. In short, the costs of sharing revenue with the PTTs prevents IRC price competition, and the increased costs are inevitably passed to the consumer.

Since deregulation, however, an alternative has emerged that allows users with mainframes, minis, personal computers or any other intelligent terminal to send and receive electronic messages. These worldwide message-switching networks are posing a competitive threat to the IRCs.

Cutting costs

Unlike the IRCs, message-switching companies are not bound to the same regulation or revenue-sharing agreements and, therefore, can offer service at a cost well below that of the IRCs. Using existing equipment and lines, message-switching companies can save users 20% to 50% of the cost of sending a message via the IRCs.

Message-switching networks, run by independent vendors, transmit data via the direct distance dialing/public telephone or public packet-switched networks. These companies lease data communications services from conventional domestic and international carriers. Switching computers placed in strategic locations worldwide tie the network together and deliver data to its final destination, usually within minutes.

Message switching supports a broad spectrum of international communications services, including electronic mail, X.25 packet-switching network access, gateways to and from telex networks and international telegrams.

The IRC response

Rather than finding ways to compete fairly with these legitimate businesses, the IRCs seem to be intent on investing their energies in knocking message-switching companies by describing them as "pirate carriers." Besides black eye patches and murder on the high seas, this label no doubt conjures up images of inferior service, shady dealings and an element of illegitimacy. As any message-switching customer should know, these labels are far from the truth.

As an operator of a worldwide message-switching network, ICBS, Inc. is contacted daily by customers who claim the IRCs have threatened to take away, downgrade or increase the price of carrier-provided equipment unless exclusive or increased usage of their transmission facilities occurs. This practice is unlawful. Message-switching companies base their transmission business on the customers' existing equipment, whether purchased, borrowed or leased from any source, including the IRCs. Users as well as the IRCs should be reminded that this is perfectly legal.

Prior to 1980, the IRCs offered telex service under a "bundled" rate structure in which charges for all service segments — transmission, access lines and terminal equipment — were merged. The Federal Communications Commission has ordered the IRCs to unbundle these segments and offer separate cost-based charges for each element. The FCC has also ordered the detariffing of telex terminal equipment. In addition, the Record Carrier Competition Act of 1981 promotes fully competitive domestic and international markets for record carrier service.

In July 1982, in the face of numerous alle-

See **IRCs** page 34

Hedges is director of sales and marketing for IBCS, Inc., a Greenwich, Conn.-based international network services provider.

DISASTER PLANNING

REX HOLLAWAY

Before disaster strikes

An optimist may shun the idea of planning for failure or disaster. Yet Murphy's Law cautions that all that can go wrong will go wrong.

Advances in technology have produced a myriad of sophisticated telecommunications products. Although the advances can be beneficial, they can be detrimental when things go wrong because users are so dependent on the equipment.

Corruption of system software, damage from fire or flooding, power failures and even sabotage are just a few of the major hazards that can cripple a company if adequate backup and recovery procedures have not been planned in detail.

A backup plan should be designed for an operational disruption of short duration, such as a cut telephone cable, common equipment failure or power outage. A disaster recovery plan should also cover disruptions that make relocation or short-term modified operations necessary, as in the case of fire, flood or other natural catastrophes.

It's conceivable that a communications system may depend on a vendor for its local-area network facilities while relying on a long-distance carrier, private branch exchange vendor and still other service providers for microwave, backup power and call accounting systems.

Connecting with the various contacts and coordinating all the recovery activities can be time-consuming with or without a plan. Frustration can undermine the effort, however, if the specific roles of each vendor have not been defined beforehand.

Where does one vendor's responsibility end and another's begin? That kind of question must be addressed either before or after the disaster. Obviously, it makes more sense to know the options ahead of time, rather than determining them after a disaster occurs.

A couple of years ago, an operations manager had the unpleasant task of explaining why a faulty 50-cent fuse kept a 1,000-line system down for more than three hours.

The reason it happened is not nearly as significant as the chaos that resulted from inadequate backup planning. This particular company happened to be a major oil supplier, and there's no doubt that productivity and revenue were harmed.

These kinds of hazards can threaten a business with all kinds of losses, depending on the length of the disruption. Direct loss of revenue from lost orders is the most serious result, but the loss of employee communications means lost productivity and, ultimately, lost dollars. The disruption of communications from management to field employees can also impact revenue. To run effectively, a company needs the ability to communicate.

A well-defined and well-tested disaster recovery plan is as necessary to a company as its business plan. Some key ingredients of a good recovery plan are:

- Identification of potential hazards. Power failures, system crashes, network service outages and other hazards must be addressed individually with one primary recovery plan and an alternative in case the main plan can't be imple-

Hollaway is a senior consultant at Mitchell & Horrell, Inc., a telecommunications consulting firm in Memphis, Tenn.

Do you disagree with a viewpoint you've seen expressed on the *Network World* opinions page? Don't let it go unchallenged; write a column about it. Manuscripts must be letter-quality, double-spaced and approximately 800 words in length.

Disk and modem submissions are preferred. Columns should be timely, controversial, literate and technically accurate. Contact Steve Moore, features editor, *Network World*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701, or call (617) 879-0700, ext. 584.

▶TELETOONS — By Phil Frank

Great Moments in Technology # 81
April 6, 1980. The first attempt at a standard ISDN interface.
Phil Frank

mented. Even labor strikes against vendors should be considered.

- In-depth planning. Recovery plans must be well-thought-out and defined to cover the most minute detail. Involve as many minds in this process as possible to cover all conceivable scenarios. For example, in the event of a vendor labor strike, prearrange backup service with a reliable technician.
- Cost-analysis preparation. Cost estimates for each part of the recovery plan should be determined and updated annually to expedite the decision process if a disaster should occur.
- Identification of funding sources. Capital to replace equipment must be available on short notice. Vendors are expected to respond quickly to emergencies, but they, in turn, expect quick payment for their services. Even if insurance will cover the losses, how prompt is the reimbursement?
- Lemon protection. New systems can create havoc if they have inherent problems that just can't seem to be fixed. Make sure the purchase contract has an adequate acceptance period and there are alternatives if the system is a lemon.
- Escalation plan. Make sure there are primary service numbers for all vendors as well as office and home numbers for immediate supervisors and their managers. Keep them updated.
- Disaster team. Create a recovery team with adequate contingencies for vacation, sickness and so on. Preassign responsibilities for each team member. One person can't do everything — at least not as quickly as a team can. At the minimum, a logical team consists of the telecommunications manager, data processing manager, facilities manager and risk manager.

It is wise to incorporate this plan into the overall company disaster recovery plan that covers DP and other critical operational issues. Some planners have made arrangements with other companies for time-sharing of their computer to cover critical automation needs, including periodic testing after normal business hours.

Because new PBX systems are run by computers, it's logical to have the backup data base stored somewhere off-site along with the business data bases.

See **Disasters** page 34

INTEREXCHANGE ACCESS

JAMES CARLINI

Don't send in the clowns

In the postdivestiture environment, public-switched networks can be divided into a three-ring circus — AT&T, the regional Bell operating companies and the interexchange carriers, such as MCI Communications Corp. and US Sprint Communications Co.

Network users have all paid for ringside seats through access charges and other regulatory fees. It's time to take a close look at how users subsidize the "Greatest Show on Earth."

The interexchange carrier part of the show can be subdivided into three categories: facilities-based, resellers and carriers' carriers.

If interexchange access is deregulated, end users' costs could be lowered significantly.

The Federal Communications Commission recently estimated the number of interexchange carriers at about 475 nationwide.

The RBOCs consider interexchange access as more than just a sideshow in their business dealings with the interexchange carriers. Ameritech, for example, pulled in revenue of more than $2.7 billion for interexchange access. It could easily save $30 million to $40 million per year by reducing and consolidating its tariff and regulatory personnel if interexchange access could be deregulated.

Many tariff filings are already consolidated at the federal level for each RBOC, yet Ameritech files separate rates in each state. By filing one overall tariff for each service for all of its operating companies, it could save paperwork as well as human work.

Face it. Having a dozen lawyers argue about rates and having a group of analysts at each operating company coming up with different rate structures does not improve the network.

Let the RBOCs spend the money on maintenance and upgrades of their switching systems and network facilities instead of on clowns and jugglers. Currently, users are paying more for services because they are paying for duplicate regulatory work and other unnecessary functions such as dividing tariffs across operating company lines.

The responses of RBOC ringmasters vary as to whether to deregulate interexchange access. Some feel that deregulating now would save the operating companies a lot of unnecessary effort. Others say that it will be deregulated in five to 10 years, but users don't want the show to go on that long.

One interesting perspective from an RBOC executive with the guts of a lion tamer is that the carriers themselves would be up in arms if interexchange access was deregulated because the carriers want regulation.

Stop the music — didn't the other common carriers say they wanted deregulation so they could compete for market share? Now, a couple years later, they are promoting regulation in certain areas such as interexchange access.

The other common carriers don't want the RBOCs to become deregulated. Some say it is because they don't want RBOCs providing interexchange service between local access and transport areas. A more interesting angle is that carriers could lose their clout with the RBOCs in demanding to see the pricing structure of access service.

The way it works today is that the interexchange carriers can require RBOCs to show how a rate for access service is derived. In a deregulated environment, they would have to live with the price and couldn't question the RBOC show in the other ring.

By deregulating interexchange access, the RBOCs could set prices that reflect the true cost of services. Some services would definitely go up, but others would not. They could also add new services that would catch the audience's eye.

By this time, users might be asking, "So what? Who cares about the access charges and pricing structures? I'm enjoying the show, anyway."

Users should care. If they are spending any sizable amount of money on telecommunications services, chances are they are spending a bundle on access charges and other regulatory costs that pay for this carnival of legal chaos.

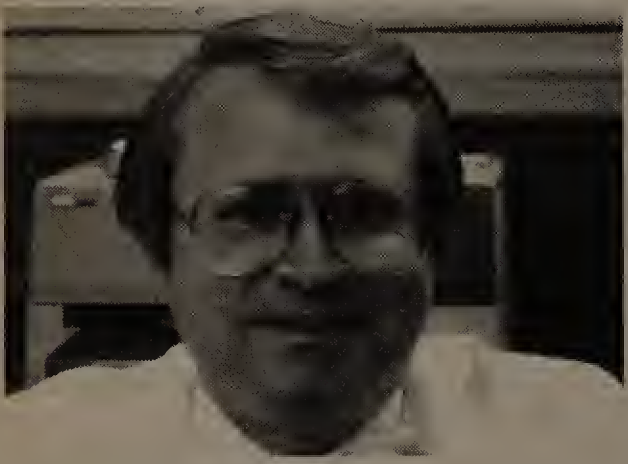
Then again, as P.T. Barnum said, "There's a sucker born every minute."

Carlini is president of Carlini & Associates, a management consulting firm in Westmont, Ill. He also lectures on information technology at Northwestern University in Evanston, Ill.

Features

November 24, 1986

Consultants and vendors: too close for comfort? Which philosophy of consulting is right? Should consultants scrupulously avoid industry investments and all other potential conflicts of interest, or should they cultivate intimate vendor relationships in an effort to better serve their clients? **Page one.**



Management with a twist
Alcoa Labs jumps off the network management bandwagon by choosing Phil Morton, formerly of Alcoa's marketing side of the house, to head the information network at the labs. Morton oversees a facility that holds 13 mainframes and provides data to 1,200 researchers. In this management philosophy, the goals of the organization drive the network as much as the technology does.
Page 31.

Calling all communications users: What's hot in the industry? Share your knowledge with other users. *Network World* is soliciting feature articles on Digital Equipment Corp. networking issues, microwave transmission and departmental networking.

Send proposals for user-oriented articles on these and other timely communications topics to Steve Moore, features editor, *Network World*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701, or call (617) 879-0700 extension 584.

▶ INVESTIGATIVE REPORT

The consultan conundru

Contending with conflicts of interest.

Continued from page 1

STC's work is the best hope the communications consulting profession has for establishing an ethical standard — a set of objective rules of conduct against which a consultant can be judged by colleagues and clients.

While the STC has done much to police the profession, the activities of many consulting firms and vendor organizations, including some of the most powerful in the industry, run counter to the STC's efforts. Fewer consultants today resort to outright bribery or vendor kickbacks to make a quick consulting buck, but more subtle forms of conflict of interest still plague the industry.

Communications consulting in 1986 is not a cottage industry. A survey of 123 consultants published in the February issue of *Communications Consultant* magazine revealed that their clients spent more than $1.2 billion last year on consultant-recommended telecommunications products. These same consultants expect their business to increase by 32% this year.

However, only about 10% of an estimated 2,000 total communications consultants belong to the STC, according to its public relations spokeswoman, Jane Laino.

After the fall

Since the industry's "fall" into the postdivestiture era, two competing philosophies of ethics in consulting practice have emerged.

One side is best represented by Tony Abbott, the current president of the STC. In a recent issue of *Lines*, the quarterly publication of the STC, Abbott wrote, "The hard bottom line of independent, professional consultancy is that earnings flow from personal competence, from objective analysis in an atmosphere of equal detachment from all products or services and from pointing the way to problem resolution rather than being a prominent part of the solution itself."

The mainline STC view emphasizes objectivity, independence and skill at recommending a set of solutions that facilitate the client's final decision.

The opposing model is represented by consultancy, market research and vendor firms that offer telecommunications consulting along with vendor relationships more

Belitsos is president of Lexicom Research, a San Francisco-based firm that offers writing and research services for the telecommunications industry. He is co-author of the recently published book Business Telematics: Corporate Networks for the Information Age *(Dow Jones-Irwin, Homewood, Ill.).*

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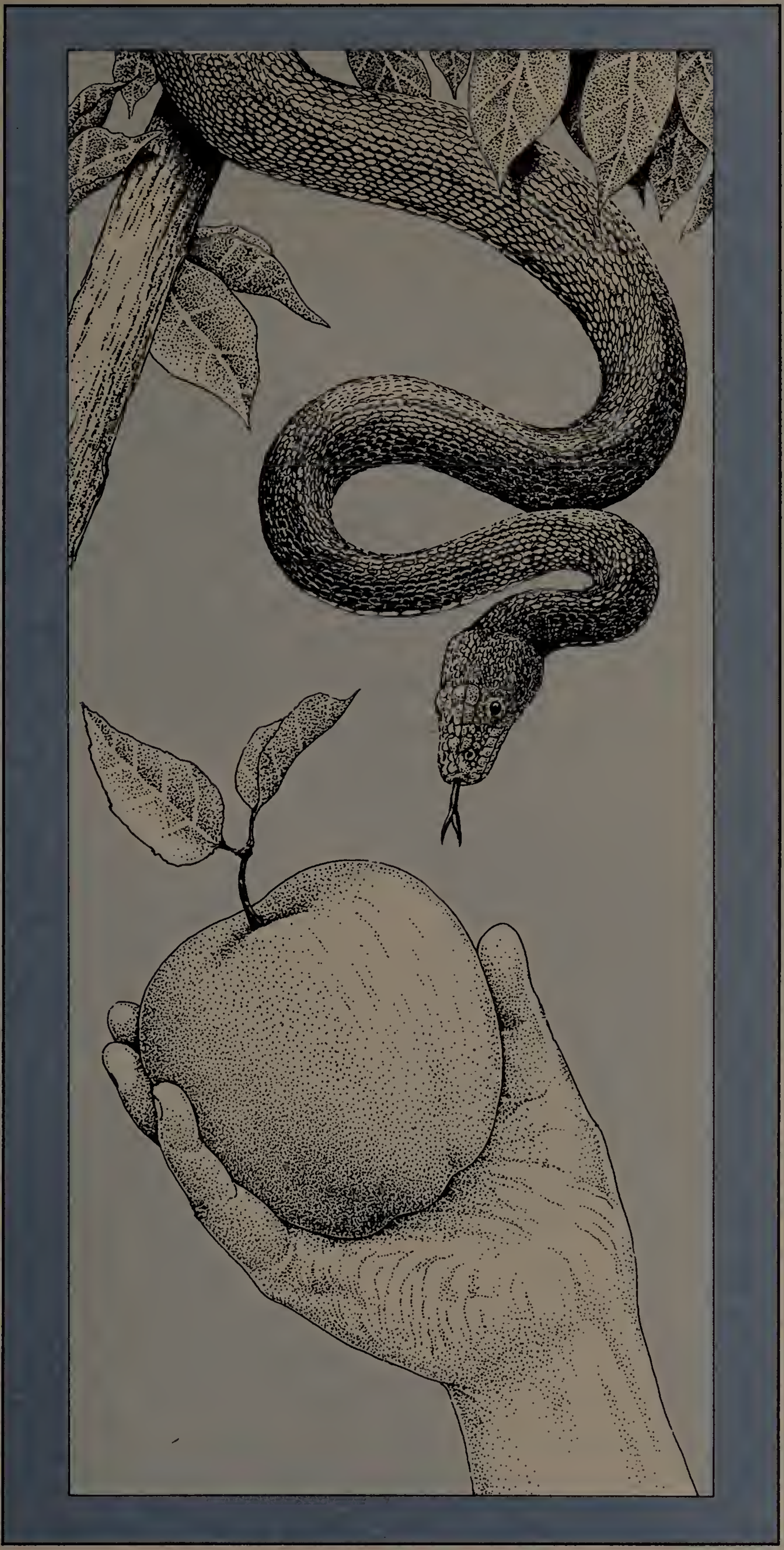


GREG WENZEL

intimate than recommended by the STC. Some well-known consultants are openly involved in vendor relationships that smack of conflict of interest, and several major vendors now have so-called consulting groups that accept fees for supposedly objective consulting.

- Data communications authority Dixon Doll, owner and founder of DMW Commercial Systems of Ann Arbor, Mich., sells telecommunications software through his firm, has large personal investments in several telecommunications vendors and is a principal in Accel Telecom Partners, a New York-based venture capital fund with six-figure investments in a number of telecommunications industry start-ups.

"There are very few individuals in the entire industry, consultants or otherwise, who don't have intrinsic conflicts," says Doll, whose company employs a large staff of full-time consultants.

"In this industry, it's not practical to function, to do one's job, without in the normal course of events getting involved in relationships that, if studied under a microscope, would involve conflict of interest."

Doll's explanation for these conditions in the industry? "The marketplace is changing so fast and is so complicated that it's not possible to adhere to such theoretical, academic and esoteric arguments about ethics," he says.

"My belief is that there is pressure in the marketplace to have solutions in hand, and consultants must be able to represent a lot of composite expertise about the best vendors and applications. The best you can do is disclose your vendor relationships. We open our kimonos with respect to disclosure of our affiliations," Doll says.

Doll's personal investments of $250,000 each in Bridge Communications, Inc. of Mountain View, Calif., Network Equipment Technologies Co. of Redwood City, Calif. and Doelz Networks, Inc. were reported in the June issue of *Forbes* magazine. His investments with his

☞ See **Consultants** page 30

Consultants from **page 29**

two partners in Accel Telecom Partners include, according to Doll, "five or six companies ranging from a couple hundred thousand up to several million in each."

A check into Securities and Exchange Commission files revealed that as of 1985, Doll personally owned more than 41,000 shares in Bridge Communications and sits on its board of directors.

- Harry Newton, well-known interconnect industry guru and publisher of *Teleconnect*, a magazine noted for its reviews of telecommunications products, is now on the payroll of Adler & Co., a powerful New York-based venture capital firm. "I'm being paid to deliver serious telecom ventures," wrote Newton in the June issue of his magazine. Newton says he receives a $2500 per month retainer from Adler, and that he expects to be given "an appropriate amount" of shares in those companies Adler decides to finance.

"I was Mr. Clean for a long time," says Newton, a perennially popular speaker at industry gatherings. "Before entering into this relationship with Adler, I really agonized about the conflict issue. But one of the things that changed my mind was realizing that other well-known consultants and so-called industry gurus were also involved with venture capital. Look at Howard Anderson or Dixon Doll. It's almost inevitable that knowledgeable people who have been writing, researching and lecturing about the field for years will get involved in investments."

But working with Adler could compromise Newton's objectivity. He admits that many of the companies he refers for venture funding may advertise or have their products reviewed in *Teleconnect*. Newton also admits to talking to some of his current advertisers about having Adler invest some of its capital in their firms to beef up their ongoing operations.

How does Newton handle worries about conflict of interest? "It's obvious that at some stage I'm going to be right in the middle of it," Newton says candidly, "and I don't really know how to resolve it. My theory is to just let everyone know that I am aware of the potential for conflict."

- GTE's Network Consulting Service organization, which operates under the auspices of the Telephone Operating Group, is a full-service provider of consulting. According to GTE spokesman Paul Heagan, "the group represents far more than just GTE products. It will advise on any range of products as requested by the customer. Of course, it is company policy that anyone from the group identifies himself or herself as being with GTE. On the other hand, the network consulting service organization operates independently. Its only source of revenue is consulting fees and it has no incentive to generate revenue for other GTE units."

Many independent consultants bristle at the thought that vendors, given their far superior market power, are taking advantage of customers in this way. "I can't remember the last time AT&T or Sprint recommended an MCI WATS line, can you?" remarks Robert Wade Brown, president of Robert Wade Brown & Associates in Telecommunications, a consulting firm in Austin, Texas.

- IBM's U.S. marketing group has recently unveiled plans to have its salespeople identify opportunities for IBM consultants and systems designers to solve peculiar customer problems that IBM's off-the-shelf equipment can't completely manage.

According to Dixon Doll, this makes IBM the leading example of the trend in consulting toward the new role of systems integration. Of course, while consultants like Doll are moving in this direction from a former position of vendor independence, IBM becomes just another example of a vendor that has found a sophisticated way to drum up sales for its own equipment.

> *"The STC itself was once rocked by revelations of wrongdoing in its own inner circle."*

For example, the Complex Systems Organization, part of IBM's Federal Systems Division and consisting of about 5,000 people, goes after systems integration business for IBM in both the government and the private sectors. A project currently being implemented for the Federal Aviation Administration integrates products from Wang Laboratories, Inc. of Lowell, Mass. and Computer Sciences Corp. of El Segundo, Calif. as part of an overall solution, according to IBM spokesman Carter Cromwell.

The charter of the group allows IBM consultants to combine products from other vendors. "If there is some piece of equipment that is going to offer a better solution than IBM, it would be used instead," says Cromwell.

To what extent is IBM simply selling its products in a new systems integration package? According to Cromwell, "The Complex Systems Organization was formed to meet customer needs and find optimal solutions, which can include needs assessment, system design, systems integration and implementation."

But communications managers should think twice before accepting the counsel of IBM's new consultants. "The ultimate point is to provide an outlet for IBM products and services," says Cromwell. "If the project required all non-IBM equipment, we would withdraw from the account."

Many other large vendors offer consulting services under the same roof where equipment is manufactured or services are sold. The rallying call, as Doll points out, is providing "total solutions." For example, Nynex Corp. has just purchased Telco Research, whose consulting division offers equipment selection and implementation, network planning, and strategic and business planning.

- Consultants who become industry regulators are also subject to potential conflicts of interest. For example, when Albert Halprin was tapped in 1984 to head the Federal Communications Commission's Common Carrier Bureau, it was revealed that he had received nearly $300,000 in consulting fees in the previous 18 months from many of the same companies he is now regulating. These companies included AT&T ($75,000), Northern Telecom, Inc. ($85,000), Ameritech ($35,000) and IBM ($10,000).

Redefining objectivity

If there is marketplace pressure on consultants to draw close to vendors, what's the impact on users? According to Doll, users want total solutions, and therefore objectivity in consulting has taken on a whole new meaning.

"I see consultants becoming, in effect, systems integrators," he observes. "The real world problems of the marketplace are shifting away from the importance of being objective in selecting vendor A, B or C and toward a user attitude that says, 'I don't care what vendor gets selected. What I want is a turnkey solution.' "

Providing total solutions requires very close contact with vendors, Doll says, adding that the more discriminating clients appreciate this. "In fact, I find that the top management in client organizations is grateful to work with a consultancy firm that has much closer contact with the leading new companies and can therefore devise solutions using innovative products that differentiate their [clients'] networks from [those of] their competitors."

There is a gritty realism in some of Doll's rationalizations. Certainly such vendor relationships are a far cry from practices such as accepting kickbacks and "implementation fees" from vendors. But how far? The justification given is meeting marketplace needs. But does not the cultivation of cozy relationships with vendors involve the making up of rules to suit one's own needs? Are such relationships morally acceptable? Is morality even at issue in a cutthroat marketplace like telecommunications? And where lie the users' interests in this debate?

Some background on the history of telecommunications consulting may provide insight. At an ad hoc meeting in early 1976 at the O'Hare Hilton in Chicago, a handful of consultants first convened to promote professionalism and upgrade consulting ethics. A formal Code of Ethics and other professional activities and procedures proposed and adopted at this meeting led to the founding of the STC in 1977.

The primary motives of the STC's founders were clear. In those early days of the U.S. interconnect industry, "payoffs from vendors were the rule rather than the exception," said Mike Bledscoe, a charter member and past president of STC, at the organization's recent 10th anniversary celebration. The STC's founding members were fed up with consulting's bad reputation and wanted to restore the profession's credibility.

Today, new members are inducted and unethical members are expelled on the basis of adherence to the STC's Code of Ethics. Prospective members must supply numerous references from past clients, and those references are reviewed in detail by the membership committee. In addition, membership applications can be scrutinized and challenged by anyone in the STC.

In the 10-year history of the STC, two or three membership applicants have been turned down because of evidence of conflict of interest brought forth by STC members or vendors, according to John Barry, chairman of the STC's ethics committee and senior telecommunications consultant with Westec Services, Inc., of San Diego. In addition, "about two or three STC members have been asked to resign because of conflicts that came to our attention, and another three or four consultants who had moved too closely to vendor interests were asked either to resign or to join the STC's Vendor Advisory Council, a group of vendors who adhere to the STC's code."

Unfortunately, as if to support those who view the telecommunications marketplace with cynicism, the STC itself was once rocked by revelations of wrongdoing in its own inner circle. Just as the organization was being born in 1977, several of the STC's original founders were caught in the act of accepting fees from vendors, and one of the offenders had been involved in developing the STC's Code of Ethics. All were forced to resign.

The STC was suddenly stuck with a tarnished image. "Many prospective members balked at joining STC as a result of this incident," remembers Bruce Minor, president of Bruce K. Minor & Associates TelSys Consultants Group, Inc. in Kansas City, Mo. Minor was also the STC's first president and a primary author of the Code of Ethics. "It was 1982 or so before we fully recovered. Our ongoing policing activities really helped show people we were serious. Now consultants are flocking to join."

Today, STC is attempting to build its clout in a market still checkered with consultants and others offering professional services whose objectivity is open to question. ◼

Next week: Part two will reveal more potential consulting conflicts and will detail defensive measures that can help users avoid hiring consultants with such conflicts.

Management with a twist

DAVE VANDEVEER

Alcoa Labs has a unique approach to managing its information network.

BY MARGIE SEMILOF
Senior Writer

In a world where corporations are trying to make managers out of their best technical people, the Aluminum Corporation of America Laboratories (Alcoa Labs) is tackling information management from the opposite direction.

Alcoa Labs has hired a public relations man to manage its technical environment and has provided him with the technical resources to build its data-intensive information network.

The facility, which is Alcoa's scientific arm, provides access to information in about 13 mainframes to approximately 1,200 researchers, scientists and administrative staffers.

At the helm of the information movement team is Phil Morton, a former Alcoa Labs marketing specialist, whose diverse responsibilities include heading a team of technical experts who oversee the large research and development network, communicating information to the public and preparing technical documents for the labs.

Morton says Alcoa Labs chose this unusual approach to information management simply because the company opts to define information differently than other organizations. Information as a strategic resource can be anything from producing technical documentation to moving data to researchers on the local-area network, he says.

As a generalist, Morton's job is to maximize people's time using technology. He relies heavily on the talented technical staff he must attract to keep him abreast of the labs' information needs.

He has pulled together a variety of specialists to help plan the network, including a professor of information science at the University of Pittsburgh. He claims that as a manager, it is critical to have this eclectic mix of people to act as a knowledge base.

Morton says Alcoa Labs' information management philosophy has produced none of the traditional jealousy between voice and data specialists. "Our staff is from all different backgrounds," he says. "But we are all in the information business. We work together and reach a consensus.

"Our technical people also seem to feel they have an ally in me," he adds. "I report to the director of research [at Alcoa]. So I can pass information to the top of Alcoa management."

To facilitate the flow of information, Morton recently supervised a $1.5 million laboratory upgrade that included the installation of a TRW, Inc. broadband local-area network and the interconnection of several personal computers and peripherals from a variety of vendors. The facility, located in Alcoa Center, Pa., is in the process of beginning another $1 million upgrade to that

☞See **Management** page 32

Management from **page 31**

system.

"The success of the scientific information network is critical to the growth of the corporation," he says, "so how we handle that information is vital." Alcoa Labs serves as Alcoa's taproot for research and development.

The facility is best known as the developer of the aluminum beverage can. The Alcoa Labs research mission, however, is to help Alcoa transcend its status as an aluminum can company to become a manufacturer of advanced aluminum alloys for projects such as the space shuttle.

> *"The success of the scientific information network is critical to the growth of the corporation."*

Communications applications at Alcoa Labs are data-intensive. Although the local network is capable of handling voice traffic, the labs use Centrex services for most of their telecommunications needs. In addition, telecommunications responsibility outside of basic phone service largely belongs to the labs' education and training group.

The facility's biggest telecommunications need is to hook up to a variety of college courses received via satellite and transmitted for its employees over the labs' cable network.

Morton has been improving communications of every ilk at Alcoa Labs since 1977. He previously served as part of a group that developed technical information resources for the Aluminum Association, a trade organization for the aluminum industry.

During that time, he had a chance to meet a variety of communications professionals in the aluminum industry and study their methods of handling technical information resources.

"I knew [Alcoa Labs] was pretty far behind in networking," he says. "But we spent so much time developing employee communications tools. Once those were in place, we began to spend time on how we manage our technical resources.

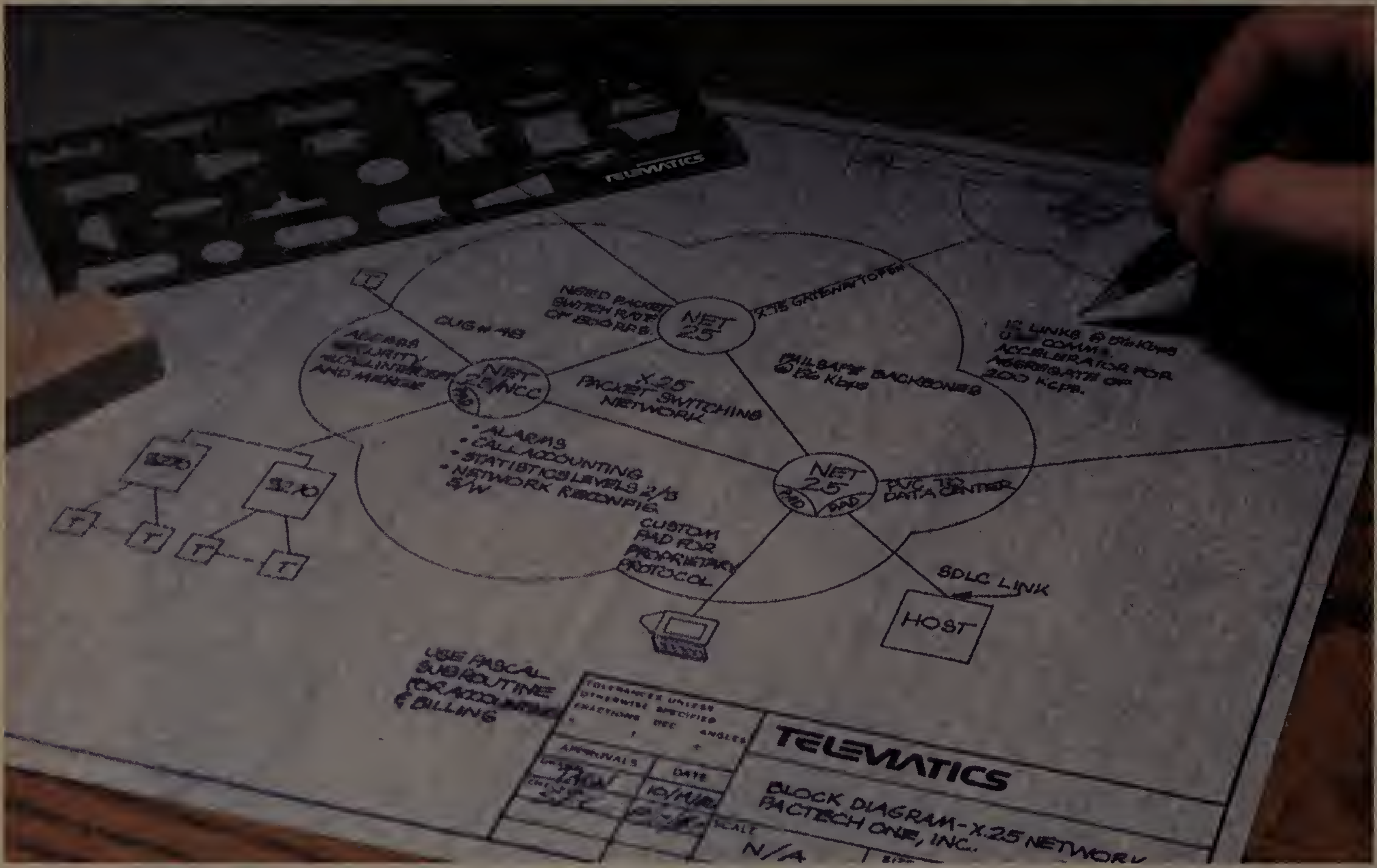
"We visited Alcan [the Aluminum Company of Canada] and [Kaiser Aluminum Corp.]," he adds. "They had already begun to use a variety of information-moving technology."

Morton corralled a team of computing and communications experts to study the research methods of the laboratory population. "The final reports issued by the group confirmed our suspicions that we were in the Dark Ages," he says.

In the early 1980s, Alcoa Labs instituted a plan to create an interactive data network that could connect to and operate transparently with any device, including a variety of personal computers, terminals and peripherals. In addition, it would allow its users to share information from a number of data bases.

Morton's network-team collaboration produced the Alcoa Information Network (ALIN). ALIN connects multiple personal computers, including IBM Personal Computers and clones, and Apple Computer, Inc. Macintoshes, via a TRW broadband local net to two Digital Equipment Corp. VAXs. The different computers communicate using the DEC All-In-One, an office automation package that includes electronic mail capa-

See **Management** page 33



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PVC TO DATA CENTER
CUSTOM PAD FOR PROPRIETARY PROTOCOL
SDLC LINK
HOST
USE PASCAL SUBROUTINE FOR ACCOUNTING & BILLING
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TELEMATICS
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1 My primary areas of activity. (Circle ONE only)
I am involved in evaluating communications (data, voice and/or image) products and services:
1. for *use within my own* company/organization
2. for *resale* to other companies/organizations
3. Both
4. Other (explain) ______________________

1a For communications, my primary responsibility is: (Circle ONE only)
1. Data Communications
2. Voice Communications
3. Both
4. Other (explain) ______________________

2 Circle only the ONE title classification which most applies to you.

Company Management
- 11. Chairman, Pres., Owner, Gen. Mgr., Partner, Director, CEO, VP, Dir. Head of Finance, Admin. Procurement

Communications Management

Data Communications
- 21. Management
  VP, Dir., Mgr., Head, Chief: Data Communications, including Networks, Engineering, Design, R&D, Application Development
- 22. Supervisory/Staff:
  Supervisor, Head: Networking, Design, Analysis, Engineering, R&D, Applications, Services

Telecommunications
- 31. Management
  VP, Dir., Mgr., Head, Chief: Telecomm., Voice Comm., including Networks, Engineering, Design, R&D, Application Development
- 32. Supervisory/Staff: Supervisor, Head: Networks, Design, Analysis, Engineering, R&D, Applications Services

Factory Communications
- 41. Management
- 42. Supervisory/Staff

MIS/Data Processing
- 51. Management
  VP, Dir., Mgr., Head, Chief: MIS/DP, Systems Application Development, Operations, Office Automation
- 52. Supervisory/Staff: Supervisor, Head of Systems Design, Analysis Applications

Others
- 75. Consultant
- 80. Educator
- 85. Financial Analyst
- 90. Marketing/Sales
- 95. Other ______________________

3 Job Function
Which one of the following best describes your functional involvement with communications (data, voice, and /or video) products? (Circle ONE only)

Corporate
1. Business Management, Planning and/or Development

Communications System/Network
2. Management, Planning and/or Development
3. Implementation and/or Operation
4. Other ______________________

4 Which one of the following best describes the primary business activity of your organization at this location? (Circle ONE only)

Consultants
- 11. DP/Communications Consulting Services
- 12. Consulting Services (except DP/ Communications)

End Users
- 13. Manufacturer (other than computer/communications)
- 22. Finance/Banking/Insurance/Real Estate
- 23. Education
- 24. Medicine/Law
- 25. Wholesale/Retail Trade
- 26. Public Utility/Transportation
- 27. Mining/ Construction/ Petroleum Refining/ Agriculture/ Forestry
- 28. Business Services (excluding DP/Communications)
- 29. Government: Federal
- 30. Government: State/Local

Vendors
- 41. Carrier: including AT&T, BOCs, Independent Telcos, Public Data Networks, International Records Carriers
- 42. Interconnect
- 43. Manufacturer Computer/Communications Equipment
- 44. Value Added Reseller (VAR), Systems House, Systems Integrator
- 45. Distributor
- 46. DP/Communications Services (excluding consulting)
- 95. Other ______________________

5 In which ways do you typically become involved in acquiring communication products (data, voice, and/or video) and services? (Circle ALL that apply)
1. Recommend/Specify
2. Identify/Evaluate Potential Vendors
3. Approve the Acquisition
4. None of the Above

6 Check ALL that apply in columns A and B.
A. I am personally involved in the acquisition process (specification, selection, approval) for the following products and services:
B. These products and services are presently in use at this location:

	A	B	Product/Services
			Computers
01.	☐	☐	Micros
02.	☐	☐	Minis
03.	☐	☐	Mainframes
34.	☐	☐	Printers
			Data Communications
04.	☐	☐	Communications Processors
05.	☐	☐	Comm./Networks Software
06.	☐	☐	Digital Switching Equipment
07.	☐	☐	Facsimile
08.	☐	☐	Modems
09.	☐	☐	Multiplexers
10.	☐	☐	Protocol Converters
11.	☐	☐	Network Mgmt. & Control
12.	☐	☐	Test Equipment
13.	☐	☐	3270 Controllers
35.	☐	☐	Intelligent Terminals
			Telecommunications
14.	☐	☐	PBXs
15.	☐	☐	Key Systems
16.	☐	☐	Central Office Equipment
17.	☐	☐	Integrated Voice/Data Terminals

	A	B	Product/Services
			Transmission/Network Services Equipment
18.	☐	☐	Microwave
19.	☐	☐	Satellite Earth Stations
20.	☐	☐	Local Area Networks
21.	☐	☐	Wide Area Networks
22.	☐	☐	Packet Switching Equipment
23.	☐	☐	Fiber Optic Equipment
36.	☐	☐	T1
			Communications Services
24.	☐	☐	Packet Switching Services
25.	☐	☐	Cellular Mobile Radio Services
26.	☐	☐	Electronic Mail
27.	☐	☐	Enhanced Services
28.	☐	☐	Centrex
29.	☐	☐	Long Haul Services
30.	☐	☐	BOC Services
31.	☐	☐	Independent Telco Services
			Other
32.	☐	☐	Factory Communications
33.	☐	☐	Online Data Bases

7 Estimated value of communications systems, equipment and services:
A. which you helped specify, recommend or approve in *last 12 months?* (Check only ONE in column A.)
B. which you plan to specify,recommend or approve in *next 12 months?* (Check only ONE in column B.)

	A	B			A	B	
1.	☐	☐	$10 million and over	6.	☐	☐	$100,000 - $249,999
2.	☐	☐	$5 million - $9.9 million	7.	☐	☐	$50,000 - $99,999
3.	☐	☐	$1 million - $4.9 million	8.	☐	☐	Under $50,000
4.	☐	☐	$500,000 - $999,999	9.	☐	☐	Don't Know
5.	☐	☐	$250,000 - $499,999				

8 Estimated gross annual revenues for your entire company/institution:
(Circle ONE only)
1. Over $1 billion
2. $500 million to $1 billion
3. $100 million to $499.9 million
4. $50 million to $99.9 million
5. $10 million to $49.9 million
6. $5 million to $9.9 million
7. under $5 million

9 Estimated number of total employees at this location:
(Circle ONE only)
1. Over 5,000
2. 1,000 - 4,999
3. 500 - 999
4. 250 - 499
5. 100 - 249
6. 50 - 99
7. 20 - 49
8. 1 - 19

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THE WEEKLY FOR LEADING USERS OF COMMUNICATIONS PRODUCTS & SERVICES

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▶ STARLAN

Standard steps forward

BY BRUCE HOARD
Editor

SAN DIEGO — Meeting here last week, the IEEE 802.3 1-Base-5 task force propelled its Starlan local-area network standard one step closer to final approval. It also announced a proposed deadline for approval of a new Multipoint Extension standard for linking personal computers and other devices through Starlan.

Starlan is a 1M bit/sec local net developed by AT&T that runs on standard, unshielded twisted-pair telephone wiring. It was introduced in June 1985, and initial shipments were made in April 1986.

According to Robert Galin, chairman of the 1-Base-5 task force, all 34 group members in attendance at last week's meeting unanimously approved the standard's technical specifications.

The proposed standard — which has already spawned a bevy of products — now moves on to the IEEE's Technical Committee for Computer Communications, where Galin expects it to be approved by the end of March 1987.

The next and final step for the standard would take it before the IEEE Standards Board for final approval around June of next year.

Galin expects the prospective Multipoint Extension (MPE), or "Daisy Chain" Starlan connection standard, to face its first letter ballot in approximately a year. 1-Base-5 has been working on it since January of this year.

As envisioned, MPE would specify a method for linking multiple personal computers in a daisy chain configuration to a Starlan hub via only two pairs of twisted-pair wires coming from one end of the chain.

The MPE standard also specifies a scheme for letting users create small clusters of Starlan-based personal computers with off-the-shelf, precut lengths of wire, thus eliminating the need for prewired buildings.

Galin, who is also product marketing manager for Data Communications Operation at Intel Corp., said there are currently various but incompatible versions of MPE being offered by the growing number of companies selling Starlan products. Starlan vendors include AT&T, Hewlett-Packard Co., Western Digital Corp., AST Research, Inc., Micom Systems, Inc., Interlan, Inc. and Xerox Corp.

He noted the importance of MPE in Europe and Japan, saying, "There is not lots of spare wiring there like there is in the U.S."

▶ SOFTWARE RESEARCH CORP.

SRC takes ax to staff

NATICK, Mass. — Software Research Corp. (SRC), an early entrant in the fledgling document interchange software market, has pared its work force to the bone and discontinued work on its flagship product, an inside source told *Network World* last week.

The source, who asked not to be named, said SRC two weeks ago laid off all but approximately 20 members of its roughly 70-member work force. In June, the company slashed its employee rolls from 125 to about 70.

The source said only employees in the company's consulting and custom software development operations were unaffected by the cutbacks.

The company has also discontinued sales and development work on its Strategic Network Environment software, which was designed to translate and transfer documents created on a variety of computer systems ("A bumpy road to success," *NW*, Aug. 18). The source said the product was selling poorly.

Despite repeated requests, company officials refused to comment on the recent actions.

In the days before the layoffs were announced, the source said, SRC executives met with officials of rival Soft-Switch, Inc., based in King of Prussia, Pa., in an attempt to sell the rights to the Strategic Network Environment product. Soft-Switch founder Michael Zisman would not comment on whether such a meeting took place or whether SRC tendered the sales offer.

— By Jim Brown and Nadine Wandzilak

Northern from **page 2**

com equipment.

Horrell said flatly, "Northern is a case study in poor marketing."

The withdrawal from direct sales in the Western region follows a similar retreat the company made in Southwestern Bell Corp. territory a few years ago, according to Potter. Asked if this decision indicates a total withdrawal from direct sales, he said, "We are constantly reviewing distribution strategies. In the East we have a critical mass, a large direct sales organization, and we don't perceive the need for any changes there."

Other than Rolm, most of the major private branch exchange manufacturers maintain only a few direct sales offices, Horrell said. "There's no money in the direct market. Watch for Northern Telecom to start selling its direct sales offices on a state-by-state basis."

News of the sale was greeted enthusiastically by Centel Business Systems, the nation's largest independent distributor of Northern Telecom equipment. "Frankly, I feel more comfortable competing against PacTel than the manufacturer," said Steve Vanderwoude, president of the $200 million company.

"I think this represents a change in Northern's distribution strategy," Vanderwoude said. "It looks like they are going to spend more time supporting their distributors and rely more heavily on indirect distribution as opposed to direct."

Although Vanderwoude said he did not believe the sale of Northern Telecom's regional sales and service force would affect pricing, as the larger distributor, Centel could get a larger volume discount from Northern Telecom than PacTel.

Management from **page 32**

bility.

Alcoa researchers also have access to an extensive educational video network through its C-band and Ku-band satellite facilities. The labs also periodically host video teleconferences for organizations such as the Institute of Electrical and Electronics Engineers.

Morton says the labs took several years to evaluate DEC vs. IBM architecture. It chose DEC because the architecture would be more flexible when tying in many different personal computers and other equipment.

"We knew there might be connectivity problems," Morton says, "but in a research environment, people are naturally going to grab at any new tool that comes out.

"From a broad managerial perspective," he adds, "we are in the business of stimulating individuals. We cannot retard activity by standardizing and making everyone use the same equipment."

By attempting to provide a creative atmosphere, the network architecture forces users to give up some of the benefits of having network security.

Morton says security is always a big concern in research and development environments. Although the research primarily remains within the labs and there are standard password procedures, there are few other devices in place to protect each researcher's data.

"We spent a lot of time tearing down barriers to increase our users' productivity," Morton says. "Our product is knowledge and information, so we have to have an active and stimulated environment. Security just rebuilds barriers."

Productivity is one of the ways Morton says he gauges the success of ALIN because it's difficult to calculate whether the network gives Alcoa Labs a competitive edge over other aluminum companies.

"If you can measure success by saying the system has facilitated the decision-making process and increased the productivity of our researchers, then it has definitely been successful."

When viewing products in terms of how they aid productivity, Morton says there are many available technologies that do little to enhance communications and information processing.

"The computing industry should take a lesson from the automobile industry because it markets products in a similar fashion," he says. "Improving a product should mean more than just adding fins onto the same old car.

"If you let vendors drive your decisions, you may get some incremental improvements," he adds. "But are you really improving your situation?"

Morton adds that the success of any productivity tool depends largely on how well a staff is managed. "If people are properly managed, they will spend their extra 10 minutes a day working on research projects. If they are poorly managed, they will spend the same 10 minutes drinking coffee."

Morton, who has a bachelor's degree in sociology and journalism from the University of Missouri and a master's degree in communications from the University of Texas, defends Alcoa Labs' choice of using a marketer, rather than a technician, to oversee the information processing segment of the facility.

"I have to understand the technology to some degree," he says. "But technology is only a means to an end. It is just as important to understand the goals of an organization. Once you understand organizational objectives, you can put together teams of individuals to help implement the plan.

"There are certainly drawbacks to managing this way," he adds. "I wonder if I am asking the right questions about the network and choosing the right products. I wonder if I will be able to see storm clouds over the horizon. I also wonder what I might be able to see if I were more technically astute."

But these are questions asked by every manager, regardless of that person's level of technical orientation.

"You can certainly get astute technical people to manage from the broad perspective," he says.

"But if you try to force a technician into this role, he will probably not prosper. People have to be left to do what they do best."

> *"Alcoa researchers have access to an extensive educational video network through its satellite facilities."*

▶ LOCALNET '86

OSI work looms large

BY MARY PETROSKY
West Coast Correspondent

SAN FRANCISCO — Vendors developing products based on Open Systems Interconnect (OSI) protocol standards agree that building such protocols is an arduous task and say it will be several years before users will be able to implement networks running only OSI protocols.

In conference sessions and in interviews with *Network World* at Localnet '86 last week, vendors admitted that user expectations regarding the availability of products implementing OSI protocols may be too high.

"The reason people are so outraged that MAP isn't farther along is because last year everybody was saying MAP is here now; it was real; it was wonderful," said Judith Estrin, executive vice-president of Bridge Communications, Inc. "And the fact is, I think most people knew it was going to be a couple of years. This is a complicated technology."

The Manufacturing Automation Protocol and Technical and Office Protocol are subsets of the OSI protocols. Operation of TOP 1.0 and MAP 2.1 networks could begin next year, said Russell Sharer, director of marketing for Communication Machinery Corp. (CMC) of Santa Barbara, Calif.

However, "it will probably be early to mid-1988 before the MAP 3.0 specification is nailed down and you start to see true [International Standards Organization] protocols," Sharer said.

CMC debuts its first OSI product

CMC used the show to debut its first OSI product, a compiler that supports OSI protocols. Developed internally to help the company move from one revision of OSI specifications to another, CMC decided to offer the compiler to its customers, which are primarily hardware developers and systems integrators.

Lack of definite standards is not stopping vendors from developing and selling OSI protocol products, however.

Retix of Santa Monica, Calif., recently introduced a set of MAP 3.0 and TOP 3.0 portable software modules. Slated for delivery in the second quarter of 1987, these modules implement protocol Layers 2 through 7.

Like CMC, Retix markets its line of OSI products to vendors and systems integrators. But the company may begin marketing products to large users next year. One possible end-user line is a series of bridges, routers and gateways for interconnecting products based on Institute of Electrical and Electronics Engineers standards with those based on OSI protocols. These products are slated for introduction early next year, according to Retix.

Few vendors currently have the resources to support end users. Even Touch Communications, Inc., which has focused heavily on the end-user interface in Touch OSI, its first product, plans to sell its wares to other vendors.

Touch OSI, introduced last month, implements OSI standards for protocol Layers 3 (network) through 7 (application) and is a combination of OSI protocols and a user interface.

Touch's software is designed to provide access to files and application programs across dissimilar computers. Touch OSI makes the collection of files on a network look like an extension of the individual user's file system. It works by intercepting local file system requests from a computer's operating system. Requests for remote files are translated into ISO protocol operations, said Brian McGann, vice-president of research and development at Touch.

Touch OSI will support Unix

Currently, Touch OSI supports the MS-DOS and VMS operating systems. Sometime in 1987, the company will add support for Unix and the operating system used in Apple Computer, Inc.'s Macintosh, said McGann. Touch also plans to support the VM and MVS operating systems, but McGann said these would not be available until the end of 1987 at the earliest.

Like other vendors, Touch has opted to develop products around higher level OSI protocols even though these protocols have not yet been standardized.

"Most of the protocols today, up through [File Transfer Access Method], are at draft international standard status, and that really means they're very stable," McGann said. ◘

Cuts from **page 1**

US Sprint indicated they will follow AT&T's lead and trim their rates.

If AT&T's cuts, slated to go into effect Jan. 1, are approved by the Federal Communications Commission, the company will have slashed its long-distance rates by more than $6 billion, or some 27.3%, since June 1984.

The carrier said it will file yet another round of rate reductions, possibly as early as next month, if the FCC orders the local exchange carriers to reduce further the price they charge for local access lines. AT&T said those rate reductions will be significantly less than last week's cuts.

Last month, all local exchange carriers filed reduced rates for local access line charges with the FCC. AT&T then filed comments with the FCC calling for a further reduction of those charges.

The FCC's decision in August to lower AT&T's allowable rate of return on investment was a major force behind the $1.2 billion rate cutting proposal. The FCC cut AT&T's rate of return from 12.75% to 12.2%.

AT&T last week maintained that the long-distance cost reductions would have been proposed even if the FCC had not lowered the allowable rate of return. By requiring AT&T to modify its rate of return, the FCC inadvertently put the squeeze on other long-distance carriers. These long-distance providers are shelling out hundreds of millions of dollars for network construction, while laboring to keep service prices below AT&T's.

Both MCI and US Sprint said they will take whatever action is necessary to ensure that their long-distance communications services remain competitive with AT&T's. But both parties admitted the gap between AT&T's prices and their own is growing slimmer.

An MCI spokesman said, "The difference between our services and those of AT&T has shrunk from 40% or 45% to roughly 30% in some instances now. The overall range is far lower."

The spokesman claimed the company will wait until after the second round of AT&T price cuts are announced to propose similar cuts.

A US Sprint spokesman said his company will carefully study AT&T's proposed long-distance service tariffs. "It is our policy to be the industry price leader," he said. "If that means adjusting our rates, we will do so."

The spokesman said of the narrowing price gap: "The price margin between US Sprint and AT&T, which was 40% to 50% at one time, has narrowed appreciably. I do not think the public is ever going to see that kind of gap again."

A specific element of the proposed rate cuts calls for users in six states to pay the gross receipt and sales taxes that AT&T is currently paying when it acquires local access lines from the Bell operating companies in those states.

AT&T told the FCC that the measure would enable the company to pass on $28 million in savings in nationwide long-distance service prices. Currently, those costs are passed on to long-distance service users in all 50 states.

AT&T wants users in Connecticut, Maine, New York, Rhode Island, Vermont and Wisconsin to foot the bill for these costs by means of a surcharge. If approved, AT&T would begin collecting the fees from users in these states starting July 7, 1987.

Overall, users greeted AT&T's announcement with applause. Peter Farnham, telecommunications director for Boston-based Gillette Co., said the company's long-haul service strategy will be influenced by AT&T's proposed — and other carriers' promised — rate reductions. Farnham said Gillette is planning to subscribe to a bulk long-distance calling service such as AT&T's Megacom or MCI's Prism.

"Whenever AT&T announces rate cuts, its competitors usually follow," Farnham said. "We are waiting to see if MCI will match AT&T service cost reductions. Historically, MCI has at least matched AT&T's cuts."

George Levesque, telecommunications manager for the Massachusetts General Hospital in Boston, explained that the hospital recently switched from AT&T to one of its competitors, which provides the organization with the bulk of its long-distance services.

"Every time one carrier makes a price change, we have to look at the current long-distance service vendors we are using to see if they will match these cuts," Levesque said.

For AT&T, however, those price changes don't necessarily mean decreases across the board. In fact, private-line and other special services costs may rise.

The following services will be affected by the latest proposed cost cuts:

- AT&T's state-to-state Long Distance Service will be reduced 11% for daytime calls, 6.2% for evening calls and 2.7% for late night and weekend calls.
- A 2.3% overall price reduction for WATS and 800 Service. However, AT&T said some WATS and 800 Service users may experience a rate increase as a result of the new monthly service charge for both services.
- A reduction of monthly and/or usage charges for Megacom, Megacom 800, Software-Defined Network Service (SDN) and the proposed 800 Readyline Service.

Monthly charges for each Megacom and Megacom 800 services would be reduced by 16.7%. The usage fee for Megacom would drop 4%, and the fee for Megacom 800 would drop 1.4%.

Usage charges for SDN service would decrease by an aggregate 4.2% for two of the three pricing schedules. Usage rates for 800 Readyline, filed last month with the FCC, would drop 2.6%.

- Introduction of additional discounts on international calling for high-volume callers to some 37 countries. For a $25 monthly fee, customers would receive a 10% discount an all direct-dialed calls during the standard and discount rate periods.
- Reduction of monthly and usage charges for Pro America I, II and III long-distance service alternatives.
- A 2.8% reduction in the monthly charge for AT&T's Reach Out America calling plan. The charge for an hour's worth of long-distance calling during late night and weekend hours would drop slightly.

Customers also receive an additional 15% discount on out-of-state calls made during the early evening calling period. The monthly subscription charge would fall slightly for those who subscribe to the Reach Out America plan with the 15% discount. The prorated charge for additional calling in the evening and weekends would not change.

- Reduced holiday rates for five additional holidays. ◘

▶ INTERNATIONAL

Terror bomb rocks IBM W. German net center

BY NADINE WANDZILAK
Staff Writer

HEIDELBERG, West Germany — An estimated $1.5 million worth of damage was reported in the wake of a terrorist bombing of IBM's European Networking Center here last week.

A group known as the Red Army Faction claimed responsibility for the blast, which injured no one but damaged a mainframe computer and shattered windows at the facility. IBM estimated it will take two weeks to get the mainframe running again, and claimed no loss of data to any scientific projects.

The terrorists reportedly warned two local ministers in advance of the bombing, giving authorities time to evacuate the premises.

IBM established the networking center in July 1985 to study network standards and examine prototypes for the top layers of the International Standards Organization's seven-layer Open Systems Interconnect model. The center has also done research and development on advanced networking systems. It was working with West German universities on Layer 6 and 7 and applications, according to an IBM spokesman.

An 8-page letter left by the terrorists reportedly denounced IBM's cooperation with West German universities as well as the firm's economic influence in the country.

IBM has been the object of other terrorist attacks, even at its headquarters in White Plains, N.Y. A bomb attack there in the early 1980s damaged a building, according to an IBM spokesman.

"It doesn't surprise me that a multinational firm would get picked on," the spokesman said.

IBM declined to provide a damage estimate. The $1.5 million figure was provided by the West German federal attorney general's office.

ISDN from **page 2**

outfitted with the internal boards NCR developed for the trial that support the ISDN 2B+D interface.

Amidon said the personal computers emulate IBM 3274 terminal controllers and are used to access an IBM IMS data base management system on an IBM host at the motor vehicle division located two blocks away.

Each PC6 is connected to an ISDN 2B+D line supported by Mountain Bell's Northern Telecom DMS100 central office switch. Once within the central office, the data channels can be switched to the Department of Motor Vehicles, and voice calls can be peeled off and routed appropriately.

Amidon said the digital ISDN service obviates costly modems and should provide higher quality service that, for data, will lessen the number of retransmissions required and improve computer response time.

He said voice and data integration should also make services more economical, although he said he is not certain whether the ISDN trial will bear that out.

"My gut feeling is that the cost of ISDN will be fairly high," Amidon said. ISDN costs will be evaluated against the current price of modems, communications lines, cables and the cost of recabling terminal equipment when moved from one office to another.

Testing voice services

According to Northern Telecom, voice services to be tested in the trial include call waiting, call forwarding, three-way calling and speed calling.

Other ISDN voice services include the capabilities to route incoming calls to the first idle telephone in a group, display the telephone number of incoming calls and provide least-cost routing.

The Arizona Department of Transportation will use the 64K bit/sec B channels to support circuit and packet-switched data, and the D channel to support signaling and some packet switching, according to Meldrum.

When Honeywell is added to the trial in January, it will use the D channel for alarm signaling within two buildings.

Unisys from **page 1**

The US Sprint services will augment separate private networks operated by both Sperry and Burroughs. The Unisys source would not say if those networks — Sperry's Sperry Net and Burroughs' Bentel — handle data in addition to voice.

Much of the off-network traffic from over 400 Burroughs sites and over 500 Sperry offices will travel over US Sprint facilities.

The Unisys source claimed the anticipated $1 million annual savings was the prime reason the recently merged computer manufacturer opted to replace existing facilities with US Sprint bulk calling services.

He noted, however, that in situations where another carrier could serve one of the offices at a lower cost than US Sprint, the other carrier's services would be used.

"The US Sprint-South Central Bell technical trial could pave the way for high-speed, end-to-end data transmission services offered by the BOCs."

This latest agreement is one of several major new accounts landed by US Sprint Communications in recent months ("US Sprint rolls up a string of victories," *NW*, Oct. 27).

In a separate development, US Sprint and Bell operating company South Central Bell last week entered into a joint technical trial aimed at connecting the two firms' 56K bit/sec data services. The effort is designed to explore the feasibility of connecting AccuPulse — South Central Bell's 56K bit/sec public-switched digital service — to US Sprint's Sprintlink Switched 56K bit/sec service.

The 30-day trial, scheduled to begin in late January 1987, will allow South Central Bell to evaluate its capability for interconnection with an interexchange carrier for inter-local access and transport area data transport.

Data transport at 56K bit/sec between a user location within South Central Bell's domain and a US Sprint long-distance network point of presence is not currently available from the BOC.

Local facilities that are used to connect a user site to a US Sprint network entry point currently permit data transfer at only 9.6K bit/sec.

The US Sprint-South Central Bell technical trial could pave the way for high-speed, end-to-end data transmission services to be offered by the BOCs.

Glen Hall, US Sprint's specialized products engineering manager, said the end-to-end 56K bit/sec link could handle such applications as high-speed facsimile transmission, batch file transfer, high-speed host-to-terminal polling, low-speed video teleconferencing and encryption of data transmitted across the digital pipeline.

In the trial, a data unit, representing a device at the user location, will send a digital signal over a South Central Bell AccuPulse line at 56K bit/sec to a South Central Bell central office. The data unit will be located in Nashville.

The signal will then be routed from the Northern Telecom, Inc. DMS-100 central office switch to US Sprint's nearest point of presence.

Once the signal reaches the US Sprint point of presence, it will be sent at 56K bit/sec over the carrier's Sprintlink Switched 56 line to a second US Sprint point of presence, located in Atlanta.

After the signal arrives at the Atlanta point of presence, it will be routed at 56K bit/sec over a four-wire private line to a test device located at a South Central Bell test laboratory.

The data signal could also be originated at the Atlanta test facility and sent back across the US Sprint network to the Nashville location.

South Central Bell intends to file tariffs in the fourth quarter of this year to offer AccuPulse service in Tennessee for inter-LATA information transport. The company also plans to extend AccuPulse service throughout its 5-state region over the next five years. This would make the 56K bit/sec offering available in Alabama, Kentucky, Louisiana and Mississippi, in addition to Tennessee.

5ESS from **page 6**

"A lot of missionary work has to be done on behalf of ISDN before it can be marketed to users," said Victor Krueger, vice-president of telecommunications equipment services for Dataquest, Inc., a San Jose, Calif.-based research and consulting company. Krueger said although ISDN needs further standards development, the biggest hurdle to user acceptance will be the development of applications and pricing structures.

Don Lane, product manager for ISDN at New England Telephone, agreed with Krueger and said potential ISDN customers always ask two questions about the technology: "What will it do for me?" and "How much will it cost?"

To help answer these and other ISDN questions, Lane said, New England Telephone has put together a team of experts from various parts of the company to develop an ISDN marketing strategy.

"We've been out talking to customers about the concept of ISDN," Lane said. "The way I see it, the first customers to incorporate ISDN will probably be those customers who are expanding or changing their existing telecommunications facilities. I don't think in the near future customers will make wholesale changes to accommodate ISDN."

Lane said his company will be able to deliver ISDN service by the middle of 1988. He said early ISDN customers are likely to be users with a wide variety of in-house voice and data needs that can be met by the new technology before it becomes widespread.

"Business users will approach ISDN much the way they approached PBXs," said Dataquest's Krueger. "They will buy it when there are suitable applications to meet their needs."

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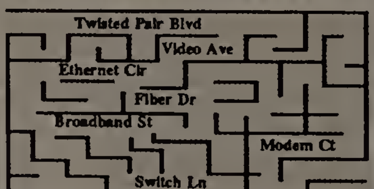

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Dec. 1-5, Colorado Springs — Optical Fiber Communications. Also, Jan. 26-30, San Diego; Feb. 23-27, Washington, D.C.; March 23-27, Orlando, Fla. Contact: The George Washington University, Continuing Engineering Education, Washington, D.C. 20052.

Dec. 3-4, Boston — Optimizing Long Distance Services. Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Dec. 3-4, Durham, N.C. — Southeastern Telecom Expo '86. Contact: Jeanne Jocys, General Telephone of the South, 4020 Roxboro Road, Durham, N.C. 27702.

Dec. 4-5, Washington, D.C. — Competitive Technology Strategies of AT&T, the BOCs and IBM. Also, Jan. 12-14, Park City, Utah; March 19-20, Chicago. Contact: TeleStrategies, 1355 Beverly Road, McLean, Va. 22101.

Dec. 4-5, Arlington, Va. — Token-Ring Network and Application Program Interfaces Seminar. Contact: Communications Solutions, Inc., 992 S. Saratoga-Sunnyvale Road, San Jose, Calif. 95129.

Dec. 8, Los Angeles — Distributed Database: How to Integrate Data in a Multi-Vendor Environment. Also, Feb. 23, Washington, D.C. Contact: Digital Consulting Associates, Inc., 6 Windsor St., Andover, Mass. 01810.

Dec. 8-9, Boston — Understanding the X.25 Protocol and Packet Switching Networks. Contact: Data-Tech Institute, Lakeview Plaza, P.O. Box 2429, Clifton, N.J. 07015.

Dec. 8-10, Stamford, Conn. — Private Networks: Future Directions. Contact: Chris Sherman, International Resource Development, Inc., 6 Prowitt St., Norwalk, Conn. 06855.

Dec. 8-10, Chicago — Fundamentals of Telecommunications. Contact: ABC TeleTraining, Inc., P.O. Box 537, Geneva, Ill. 60134.

Dec. 8-10, New York — Data Communications Systems and Networks. Also, Jan. 14-16, Houston; Jan. 21-23, Chicago; Jan. 26-28, Washington, D.C. Contact: Data Communications Institute, 55 Main St., Madison, N.J. 07940.

Dec. 8-11, Washington, D.C. — National Data Communications Symposium on Local Area Networks and Micro-Mainframe Links. Contact: Software Institute of America, Inc., 8 Windsor St., Andover, Mass. 01810.

Dec. 9-10, Washington, D.C. — Central Office Switching: New Technologies and Network Applications. Contact: Phillips Publishing, Inc., 7811 Montrose Road, Potomac, Md. 20854.

Dec. 9-10, Chicago — Digital Data Networking. Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Dec. 9-11, Los Angeles — Fiber Optic Splicing. Contact: ABC TeleTraining, Inc., P.O. Box 537, Geneva, Ill. 60134.

Dec. 11-12, Boston — Advanced Communication Architectures Seminar. Contact: Communications Solutions, Inc., 992 S. Saratoga-Sunnyvale Road, San Jose, Calif. 95129.

Dec. 11-12, New York — Telecommunications Management: Managing from Expense to Profit. Contact: McGraw-Hill Information Systems Co., 1221 Avenue of the Americas, New York, N.Y. 10020.

Dec. 11-12, Chicago — T1 Networking. Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Dec. 15-16, Washington, D.C. — Understanding the X.25 Protocol. Also, Jan. 12-13, Princeton, N.J.; Jan. 14-15, New York; Jan. 22-23, Columbus, Ohio. Contact: Data-Tech Institute, Lakeview Plaza, P.O. Box 2429, Clifton, N.J. 07015.

Dec. 16, Washington, D.C. — How to Bid on $2 Billion in Telecommunications Projects. Contact: U.S. Telecommunications Suppliers Association, Suite 1618, 333 N. Michigan Ave., Chicago, Ill. 60601.

Dec. 17-19, New York — Dexpo East '86. Contact: Expoconsul International, Inc., 3 Independence Way, Princeton, N.J. 08540.

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AT&T Information Systems	20-21
Bell Atlantic	24-25
Cleo Software	40
Communications Networks	14-15
Computer Systems Products	10
Excelan	16
Fibronics	18
Honeywell	12
Micom Systems	7
Telematics	32
Walker, Richer & Quinn, Inc.	3
Western Data Memories	6
3Com	13-15

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HORRELLSCOPES

BY EDWARD HORRELL

In communications today, it takes more than just good business sense to survive; it requires celestial guidance.

Libra: The great equalizing sign hangs appropriately over Mark Fowler, chairman of the Federal Communications Commission.

Fowler, born in the second descante of the sign, proves by his proposal to deregulate the telecommunications industry on a trial basis that he is one who likes to avoid extremes.

As true Libras will do, the FCC head apparently likes to delay committing to an idea or cause until it proves workable. That's why he is suggesting a 3-year trial on a state-by-state basis in those states where the public utility commission is willing to cooperate.

Fowler envisions local service offerings, currently regulated and restricted to local telephone companies, being opened up to competition. This competition would be accompanied by a so-called "open network architecture."

Open network architecture would ensure that competitors have the opportunity to provide these services as efficiently as the hometown boys, Fowler believes.

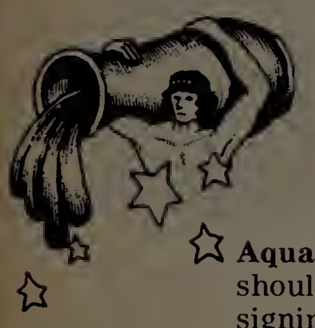
Most Libras, especially those born in early October, seek harmony. Fowler and his fellows on the FCC have been barraged by complaints about the restrictions on Bell operating companies. This proposal from a prominent Libra is an attempt to placate those discontents.

Horrellscopes salutes this gutsy move but questions Fowler's vision.

Many competitors would like to have the local business from Merrill Lynch & Co. or Federal Express Corp. But what about the little old lady out in the country? Who's going to serve her? Does anyone still subscribe to the charter of "universal service"?

It might be a radical notion, but there are still some cynics spinning about the galaxy who would like to see the BOCs prove they can handle what they've got in their constellation first before they bite off any more.

One of the key elements in Fowler's proposal is the notion that states are willing to go along with this scenario. Users should contact their state public service commission and find out what their local commission thinks of the issue. What local commissions decide could have profound impact on service and costs for telephones in the next few years.



Aquarius: The laid-back sign should be avoided when designing or developing the wiring for new buildings with high-tech systems.

Architects and developers need more education about the kind of space and conduit requirements information systems use.

Large problems are growing from the small spaces that builders and architects are allotting for the wires and conduits for telephones, computers and other information exchanging devices. The gap is widening between the telecommunications manager's vision of his space requirements and the architect's building design.

Indeed, the construction industry is not keeping up with the signs of the times. They seem to have developed a distinctly Aquarian approach to this problem: Wait it out, and see if it goes away.

Most of the time, architects draw a telephone closet, which is just what its name implies — a closet. This small, poorly lit and poorly cooled room is typical of the poor planning and design that is causing cosmic problems for businesses.

Architects and company communications managers need to get together and plan early when designing a new building to eliminate the kind of cramped quarters that can lead to expensive trouble later.

The telecommunications industry as a whole needs to address its colleagues in the spheres of architecture and construction about the need for better planning.

These builders need to be plugged into the telecommunications loop before consumers have to eat a lot of expensive renovations. As buildings get smarter, builders should too. The benefits of educating builders should be evident to the telecommunications industry.

When costly communications problems develop from overcrowded wiring and inadequately ventilated equipment, customers don't call and scream at the architect . . .

Shooting stars.

Psst! Buddy! Wanna buy a cheap telephone interconnect company that sells to hotels?

Insiders tell Horrellscopes that the telephone section of RCA Corp. doesn't even appear on the latest reorganization charts at General Electric Co., the corporate giant that swallowed RCA.

After its first reorganization of RCA, GE apparently lost interest in the telecommunications side of RCA. The refrigerator and stove company seems to have more important appliances on its mind and has left the lowly telephone part of its new enterprise to ring itself into oblivion.

Once again the highly competitive interconnect industry appears to have done its dastardly worst: another company is on the block.

Potential suitors? Not many. RCA doesn't manufacture its PBX systems. Instead, it sells Hitachi systems through regional sales and service locations. And no company has survived in the past by selling to hotels and motels.

This one will go quietly and cheaply.

Sagittarius: The archer knows that when a company consistently hits the mark, it's because that company is always taking new aim.

Most large users have a feature on their private branch exchange called automatic route selection or least-cost routing that routes the calls over the cheapest long-distance route available.

Customers forget, however, that this feature only works the way it's told. In other words, the system does only what it is told to do, and what it is told to do should be reviewed regularly.

The PBX vendor has no incentive to review the route selection function. This is especially true of AT&T. So it is up to the user to keep the telephone costs in alignment by reviewing the automatic route selection.

The most common cost errors that users need to pick up on include:

- Routing information calls over WATS lines.
- Neglecting to change queuing times for busy seasons.
- Putting 800 calls over WATS lines or other common carrier lines.

Users should also check to keep up with the status of 00 calling for operator assistance. Current automatic calling routing schemes could be affected by the introduction of new calling patterns.

Pisces: The sign of helping the needy has been given a perverse twist by not-so-needy consultants who take kickbacks from vendors.

Although Pisces is the symbol of honesty and trustworthiness, some consultants have developed a nasty habit of recommending certain systems and then taking a kickback from the vendor selling that particular system.

This is unethical and sometimes difficult to trace.

Users should be warned, however, that this kind of thing does happen and apparently is happening with more frequency than anyone cares to admit.

For their own protection, users should keep their noses in the wind to sniff out anything fishy from the consultants they select. Here are three things to watch out for:

- The consultant who is only consulting because he is between jobs. This person is a good candidate for kickbacks.
- A consultant whose track record shows that one vendor is exclusively recommended over other suppliers.
- Consultant fees that are unusually low or out of line with other consultant bids. Low fees may be a sign that the consultant is getting most of his income from another source.

To make sure the consultant and the vendor are playing fair, users should insist on signed agreements from vendors and consultants stating that the parties are not participating in any type of fee-sharing structure and that any discount goes to the buyer, not the consultant.

Horrell is president of Mitchell & Horrell, Inc., a telecommunications consulting firm in Memphis, Tenn.

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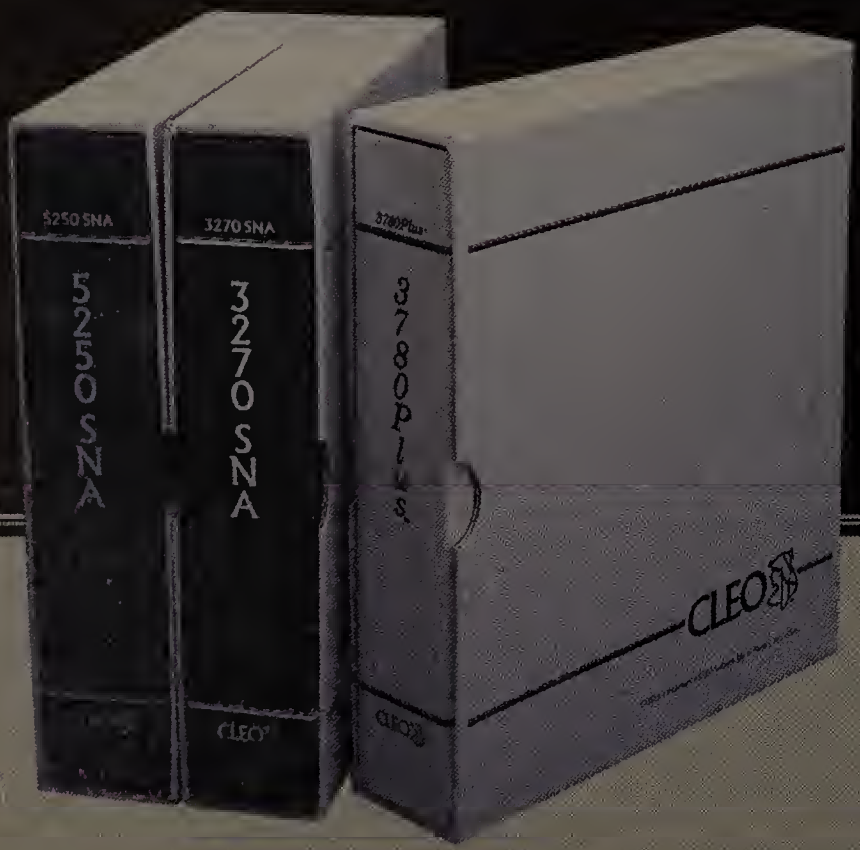

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